

CBM2013-00027
U.S. Pat. No. 6,418,419
Docket No.: 6208-0104L

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CHICAGO MERCANTILE EXCHANGE, INC.
Petitioner

v.

5TH MARKET, INC.
Patent Owner

Case CBM2013-00027
Patent 6,418,419

**PATENT OWNER 5TH MARKET, INC.'S
NOTICE OF APPEAL**

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U.S. Patent No. 6,418,419

Notice is hereby given, pursuant to 37 C.F.R. § 90.2(a), that Patent Owner 5th Market Inc. (“5th Market”) hereby appeals to the United States Court of Appeals for the Federal Circuit from the Final Written Decision by the Patent Trial and Appeal Board (“PTAB”) entered on December 17, 2014 (Paper 33) as modified by the Decision on Patent Owner’s Request for Rehearing entered on March 23, 2015 (Paper 38), and from all underlying orders, decisions, rulings and opinions, including without limitation the Institution Decision of Covered Business Method Patent Review dated December 18, 2013 (Paper 9) of U.S. Patent No. 6,418,419 (“the ‘419 patent”).

This Notice timely given pursuant to 37 C.F.R. § 90.3(b), as the Rehearing Request filed by Patent Owner on January 15, 2015 (Paper 34) reset the time for appeal to no later than sixty-three days after action on the request (*i.e.*, the Decision on Rehearing dated March 23, 2015).

For the limited purpose of providing the Director with the information requested in 37 C.F.R. § 90.2(a)(3)(ii), 5th Market expects that the issues on appeal may include the following, as well as any underlying findings, determinations, rulings, decisions, opinions, or other related issues:

- Whether the PTAB erred in finding that claims 1-4, 6-23, and 41-49 are unpatentable under 35 U.S.C. § 103(a) (pre-AIA);

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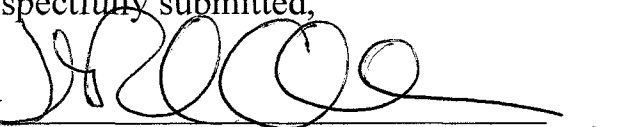
- Whether the PTAB erred in finding that claims 1-23 are unpatentable under 35 U.S.C. § 112, second paragraph (pre-AIA);
- Whether the PTAB erred in denying the Motion to Amend as to claims 1-4 and 6-23; and
- Whether the PTAB erred in finding the '419 patent eligible for covered business method review.

Copies of this Notice of Appeal are being filed simultaneously with the Director of the USPTO, the PTAB, and the Clerk of the United States Court of Appeals for the Federal Circuit.

Dated: May 22, 2015

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that on May 22, 2015, a copy of the Patent Owner 5th Market Inc.'s Notice of Appeal was filed with the Patent Trial and Appeal Board and served and/or filed as set forth below.

Service and Filing by Hand Delivery (original version):

Director of the United States Patent and Trademark Office
c/o Office of the General Counsel
Madison Building East, 10B20
600 Dulany Street
Alexandria, VA 22314-5793

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Honorable Daniel E. O'Toole, Clerk of Court
United States Court of Appeals for the Federal Circuit
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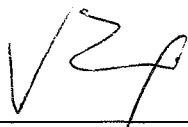
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Paper 33
Entered: December 17, 2014

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CHICAGO MERCANTILE EXCHANGE, INC.,
Petitioner,

v.

5th MARKET, INC.,
Patent Owner.

Case CBM2013-00027
Patent 6,418,419 B1

Before JAMESON LEE, JONI Y. CHANG, and MICHAEL R. ZECHER,
Administrative Patent Judges.

ZECHER, *Administrative Patent Judge.*

FINAL WRITTEN DECISION
35 U.S.C. § 328(a) and 37 C.F.R. § 42.73

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I. BACKGROUND

Petitioner, Chicago Mercantile Exchange, Inc. (“CME”), filed a Petition requesting a review under the transitional program for covered business method patents of claims 1–23 and 41–49 of U.S. Patent No. 6,418,419 B1 (“the ’419 patent”). Paper 3 (“Pet.”). Patent Owner, 5th Market, Inc. (“5th Market”), timely filed a Preliminary Response. Paper 6 (“Prelim. Resp.”). Taking into account the arguments presented in 5th Market’s Preliminary Response, the Board determined that the information presented in CME’s Petition demonstrated that it was more likely than not that claims 1–23 are indefinite under 35 U.S.C. § 112 ¶ 2, and that claims 1–23 and 41–49 are unpatentable under 35 U.S.C. § 103(a). Pursuant to 35 U.S.C. § 324,¹ the Board instituted this proceeding on December 18, 2013, as to these claims of the ’419 patent. Paper 9 (“Dec.”).

During the course of this proceeding, 5th Market timely filed a Patent Owner Response (Paper 20, “PO Resp.”), along with a Motion to Amend (Paper 21, “Mot. to Amend”). CME timely filed a Reply to the Patent Owner Response (Paper 24, “Pet. Reply”), along with an Opposition to the Motion to Amend (Paper 23, “Opp. to Amend”). 5th Market timely filed a Reply to the Opposition to the Motion to Amend. Paper 26 (“Reply to

¹ See section 18(a) of the Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284, 329 (2011) (“AIA”). Section 18(a)(1) of the AIA provides that the transitional program for covered business method patents will be regarded as a post-grant review under chapter 32 of title 35 United States Code and will employ the standards and procedures of a post-grant review, subject to certain exceptions.

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Amend”). An oral hearing was held on August 7, 2014, and a transcript is of record. Paper 32.

We have jurisdiction under 35 U.S.C. § 6(c). This decision is a Final Written Decision under 35 U.S.C. § 328(a) as to the patentability of claims 1–23 and 41–49 of the ’419 patent. For the reasons discussed below, CME has demonstrated by a preponderance of the evidence that claims 1–23 are indefinite under 35 U.S.C. § 112 ¶ 2, and that claims 1–4, 6–23, and 41–49 are unpatentable under 35 U.S.C. § 103(a). CME has not demonstrated by a preponderance of the evidence that claim 5 is unpatentable under 35 U.S.C. § 103(a). We also deny 5th Market’s Motion to Amend.

A. Related Matter

After we instituted a review of the ’419 patent, CME file a Petition challenging the patentability of claims 1, 2, 4, 6–8, and 10 of U.S. Patent No. 7,024,387 B1 (“the ’387 patent). *Chicago Mercantile Exch., Inc. v. 5th Mkt., Inc.*, Case CBM2014-00114, Paper 2 (PTAB April 3, 2014). The ’387 patent is a child of the ’419 patent. CBM2014-00114, Ex. 1001, at [63]. We instituted a covered business method patent review only as to claims 4, 6–8, and 10 of the ’387 patent under 35 U.S.C. § 103(a) as being obvious over two of the prior art references that serve as the basis of the grounds of unpatentability instituted in this proceeding. CBM2014-00114, Paper 9. CME also identifies the following reexaminations involving the ’419 patent and the ’387 patent: (1) Reexamination Control Nos. 90/011,603 and 90/011,618, both of which involve the ’419 patent; and (2) Reexamination Control No. 95/002,032, which involves the ’387 patent. Pet. 6–7.

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B. CME's Standing

Section 18 of the AIA governs the transitional program for covered business method patent reviews. Section 18(a)(1)(B) of the AIA limits such reviews to persons, or their privies, that have been sued or charged with infringement of a covered business method patent. CME asserts that it has been sued for infringement of the '419 patent and the '387 patent in *Fifth Market, Inc. v. CME Group Inc.*, No. 08-0520 GMS (D. Del.). Pet. 6.

C. The '419 Patent

The '419 patent generally relates to the conditional trading of securities, such as convertible bond swaps, risk arbitrage, and combinations thereof, in both listed and over-the-counter markets via one or more electronic networks. Ex. 1001, 1:7–13. According to the '419 patent, there is no computer network that links participants involved in convertible securities in a transaction-oriented format. *Id.* at 1:32–33. Virtually every transaction is through verbal private negotiations, i.e., almost every bid, offer, or trade is made verbally and is transmitted only to the participants involved. *Id.* at 1:33–36. The '419 patent purportedly solves this problem by creating an anonymous auction market, instead of a negotiated market, that displays prices to all participants and saves the trade information for later use. *Id.* at 1:36–41.

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Figure 1 of the '419 patent, reproduced below, illustrates a conditional order transaction system. Ex. 1001, 4:39–41.

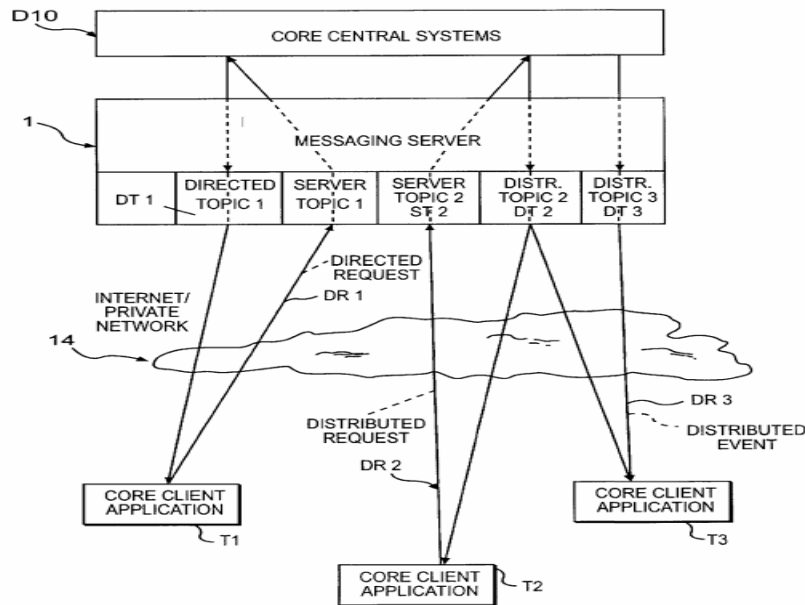
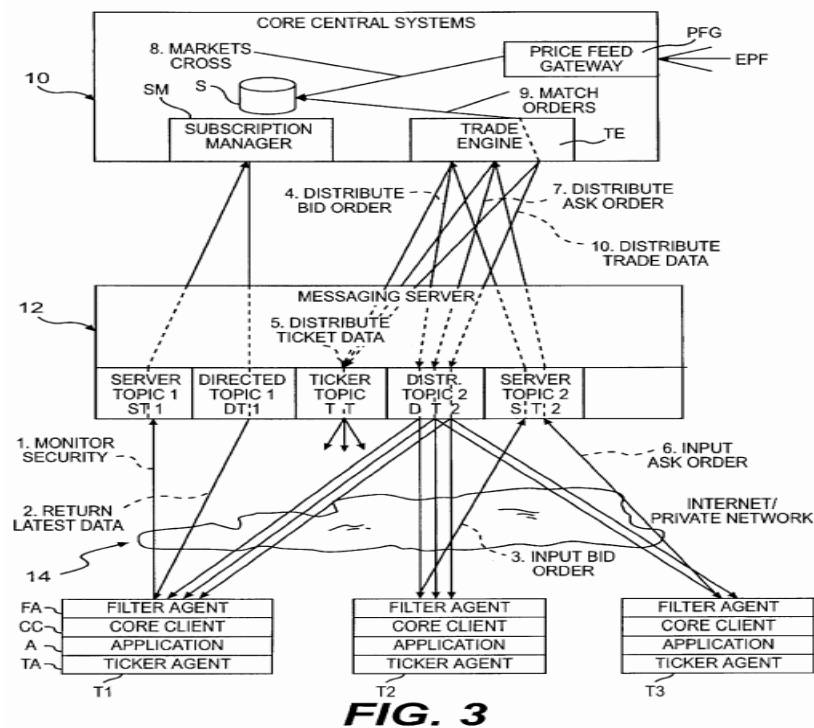


FIG. 1

As shown in Figure 1 of the '419 patent, there are three scenarios which use a conditional order routing exchange (“CORE”). *Id.* at 5:16–18. The first scenario includes CORE client program T1, which formats and transmits a client/subscriber/trade request with a directed response; the second scenario includes CORE client program T2, which formats and transmits a client request whose response is disseminated to various interested parties; and the third scenario involves CORE client program T3, which receives data that originates outside the system and, subsequently, redistributes it to all interested parties. *Id.* at 5:18–61.

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Figure 3 of the '419 patent, reproduced below, illustrates the processing of a match order using the conditional order transaction system of Figure 1. Ex. 1001, 4:45–46, 6:41–42.



As shown in Figure 3 of the '419 patent, a first client requests to be informed about events relating to a given security; a second client places a bid for that security; and a third client places an ask for that same security. *Id.* at 6:42–46. The processing steps illustrated in Figure 3 of the '419 patent are as follows: (1) Monitor Security; (2) Return Latest Data; (3) Input Bid Order; (4) Distribute Bid Order; (5) Distribute Ticker Data; (6) Input Ask Order; (7) Distribute Ask Order (also Distribute Ticker Data); (8) External Prices Converge Making Orders Cross; (9) Match Crossed Orders; and (10) Distribute Trade Details. *Id.* at 6:47–62.

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D. Illustrative Claims

Claims 1, 41, and 43 are independent claims. Claims 2–23, 44, and 45 directly or indirectly depend from independent claim 1; claims 42, 46, and 47 directly depend from independent claim 41; and claims 48 and 49 directly depend from independent claim 43. Independent claims 1 and 41, as amended following *ex parte* reexamination of the '419 patent, are illustrative of the challenged claims and are reproduced below:

1. A conditional order transaction network that matches or compares buy and sell orders for a plurality of security instruments based upon conditions set forth within the order, including price represented as an algorithm with constraints thereon, the transaction network comprising:
 - a variable number of trader terminals for entering an order for a security instrument in a form of an algorithm with constraints thereon that represent a willingness to transact, where price of one security is a dependent variable of the algorithm within the constraints and dynamically changing price of another security is an independent variable thereof, the price as the dependent variable being continuously changeable responsive to changes in price of the independent variable, the algorithm representing a buy or sell order; and
 - at least one controller computer coupled to each of the variable number of trader terminals over a communications network and receiving as inputs,
 - a) each algorithm with its corresponding constraints, and
 - b) at least one external price feed depicting prices of various securities and contracts from external multiple exchanges which may be used as an independent variable of the algorithm or an input to a constraint variable, the controller computer comprising,
 - means for matching, in accordance with the constraints and the conditions, algorithmic buy orders with algorithmic sell

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orders, one of the conditions being a requirement that two or more securities are tradable contemporaneously as a contingent trade of those respective securities, and

means for matching or comparing, in accordance with the constraints and the conditions, algorithmic buy/sell orders with algorithmic or non-algorithmic sell/buy orders through use of the external multiple data sources.

Ex. 2001, 1:26–61 (brackets and italics omitted).²

41. A conditional order transaction network that matches buy and sell orders for a plurality of items based upon conditions set forth within an order for an item, including price represented as an algorithm with constraints thereon, the conditional order transaction network comprising:

a variable number of trader terminals for entering the order for a traded item being an option in a form of an algorithm with constraints thereon that represent a willingness to transact, where price of the traded item is a dependent variable of the algorithm within the constraints and dynamically changing price of another item is an independent variable thereof, the price of the traded item as the dependent variable being continuously changeable responsive to changes in price of the another item as the independent variable, the algorithm representing a buy or sell order for said traded item;

controller computer means coupled to each of the variable number of trader terminals over a communications network and receiving as inputs each algorithm with its corresponding constraints, and at least one external price feed depicting at least one price of at least one item from at least one external network which is used as either the independent

² Exhibit 2001 was entered into the record by 5th Market and refers to *Ex Parte* Reexamination Certificate No. US 6,418,419 C1 issued on February 21, 2013.

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variable of the algorithm or an input to a constraint variable;
and

means for matching, in accordance with the constraints and the conditions, through use of the at least one external price feed from the at least one external network, at least one of algorithmic or non-algorithmic buy orders with algorithmic sell orders, and non-algorithmic buy orders with algorithmic sell orders, one of the conditions being a requirement that two or more securities are tradable contemporaneously as a contingent trade of those respective securities responsive to changes in price of said another item as the independent variable.

Id. at 3:1–37 (brackets and italics omitted).

E. Covered Business Method Patent

Upon considering the information presented by CME in its Petition, as well as the arguments presented by 5th Market in its Preliminary Response, we determined that the '419 patent is a covered business method patent, as defined in section 18(a)(1)(E) of the AIA and 37 C.F.R. § 42.301, because at least one claim of the '419 patent is directed to a covered business method. Dec. 8–10. Consequently, we concluded that the '419 patent is eligible for a covered business method patent review. *Id.* at 10.

In its Patent Owner Response, 5th Market contends that a review was improperly instituted as to claims 1–23 of the '419 patent on the basis of 35 U.S.C. § 112 ¶ 2 because questions of patentability under § 112 ¶ 2 are ineligible for review under the transitional program for covered business method patents. PO Resp. 73. We are not persuaded by 5th Market's assertion that a petitioner in a covered business method patent review may not raise questions of patentability under U.S.C. § 112 ¶ 2. As we explained

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previously, section 18(a)(1) of the AIA provides that the transitional program for covered business method patents will be regarded as a post-grant review under chapter 32 of title 35 of the United States Code and will employ the standards and procedures of a post-grant review, subject to certain exceptions. Section 321(b) of title 35 provides that “[a] petitioner . . . may request to cancel as unpatentable 1 or more claims of a patent on any ground that could be raised under paragraph (2) or (3) of section 282(b).” Section 282(b)(3) of title 35 provides, in relevant part, that a petitioner may challenge the “[unpatentability] of the patent or any claim in suit for failure to comply with—(A) any requirement of section 112, except . . . the failure to disclose the best mode.” Therefore, contrary to 5th Market’s assertion, a petitioner in a covered business method patent review may raise questions of patentability under U.S.C. § 112 ¶ 2.

1. Technological Invention

The definition of a “covered business method patent” in section 18(d)(1) of the AIA does not include patents for “technological inventions.” When determining whether a patent is for a technological invention, we consider “whether the claimed subject matter as a whole recites a technological feature that is novel and unobvious over the prior art; and solves a technical problem using a technical solution.” 37 C.F.R. § 42.301(b).

In its Patent Owner Response, 5th Market contends that the ’419 patent, viewed as a whole, falls within the purview of the technological invention exclusion set forth in 37 C.F.R. § 42.301(b). PO Resp. 73. 5th

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Market relies upon the legislative history of the AIA to support this argument. *Id.* According to 5th Market, examples of subject matter that should not be subject to the transitional program for covered business method patents include ““novel software tools and graphical user interfaces that are used by the electronic trading industry workers to implement trading or asset allocation strategies.”” *Id.* at 73–74 (quoting 175 CONG. REC. S5433 (daily ed. Sept. 8, 2011) (statement of Sen. Durbin)) (emphasis omitted). 5th Market, however, does not explain adequately how the ’419 patent, viewed as a whole, includes novel software tools and graphical user interfaces. Notwithstanding 5th Market’s general allegation, we maintain our initial determination that CME has demonstrated that the ’419 patent is not for a technological invention and, therefore, is eligible for a covered business method patent review. Dec. 9–10.

F. Prior Art Relied Upon

CME relies upon the following prior art references:

Lupien US 5,101,353 Mar. 31, 1992 (Ex. 1010)

Memorandum from the Commodity Futures Trading Commission on the New York Mercantile Exchange’s (“NYMEX”) Proposal to Implement the NYMEX ACCESS Trading System (Dec. 7, 1992) (on file with the CFTC) (Ex. 1009) (“CFTC”).

RICHARD S. WILSON & FRANK J. FABOZZI, CORPORATE BONDS STRUCTURES & ANALYSIS (1996) (Ex. 1011) (“Wilson”).

Allan D. Grody et al., *Global Electronic Markets A Preliminary Report of Findings* (Center for Digital Economy Research, Working Paper No. STERN IS-95-18, 1994) (Ex. 1012) (“Grody”).

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DICTIONARY OF FINANCE & INVESTMENT TERMS (4th ed. 1995)
(Ex. 1013) (“Dictionary”).

Globex User Guide, REUTERS Ltd. (1996) (Ex. 1014) (“Globex User Guide”).

G. Instituted Grounds of Unpatentability

We instituted this proceeding based on the asserted grounds of unpatentability set forth in the table below.

References	Basis	Claims Challenged
	§ 112 ¶ 2	1–23
CFTC and Lupien	§ 103(a)	1, 2, 4, 6–8, 11, 15, 16, 22, 23, and 41–49
CFTC, Lupien, and Wilson	§ 103(a)	3 and 5
CFTC, Lupien, and Grody	§ 103(a)	9, 10, 12, 14, and 18
CFTC, Lupien, and Dictionary	§ 103(a)	13 and 17
CFTC, Lupien, and Globex User Guide	§ 103(a)	19–21

II. ANALYSIS

A. Claim Construction

In a covered business method patent review, claim terms are given their broadest reasonable interpretation in light of the specification of the patent in which they appear. 37 C.F.R. § 42.300(b). Under the broadest reasonable interpretation standard, and absent any special definitions, claims terms are given their ordinary and customary meaning as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *In re Translogic Tech. Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

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1. Claim Phrases Construed in the Decision to Institute

In its Petition, CME identified several claim phrases recited in the '419 patent, including two means-plus-function limitations, and provided claim constructions for those phrases. Pet. 8–15. Those claim phrases are listed as follows: (1) “means for matching” (claims 1, 41, and 43); (2) “means for matching or comparing” (claim 1); (3) “comparator for comparing all incoming orders relative to outgoing orders” (claims 23 and 42); (4) “external price feed” (claims 1, 41, and 43); and (5) “controller computer means” (claims 41 and 43). Pet. 8–15. In its Preliminary Response, 5th Market proposed alternative claim constructions for all the claim phrases identified by CME in its Petition, except “controller computer means” (claims 41 and 43). Prelim. Resp. 13–19. In the Decision to Institute, we construed each claim phrase identified in the Petition. Dec. 13–23.

In its Patent Owner Response, 5th Market proposes alternative claim constructions for the claim phrases “external price feed” (PO Resp. 9–10) and “means for comparing” (*id.* at 76–78). 5th Market, however, does not propose alternative claim constructions for the remaining claim phrases that we construed in the Decision to Institute. In its Reply, CME does not propose an alternative claim construction for any claim phrase that we construed in the Decision to Institute. With the exception of “external price feed” and “means for comparing,” which we will address below, we discern no reason to address or alter our claim constructions for the remaining claim

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phrases in this Final Written Decision. For convenience, those claim constructions are reproduced in the table below.

Claims	Claim Phrase	Claim Construction
1, 41, and 42	“means for matching”	<u>Claimed function</u> : “matching” <u>Corresponding structure</u> : “a computer programmed to perform the ten processing steps illustrated in Figure 3 of the ’419 patent”
23 and 42	“a comparator for comparing all incoming orders relative to outgoing orders”	“a device that ‘compare[s] all incoming orders relative to outgoing orders”
41 and 43	“controller computer means . . . receiving as inputs”	“a computer that receives, as input, data”

2. “external price feed” (claims 1, 41, and 43)

Independent claim 1 recites, in relevant part, “at least one external price feed depicting prices of various securities and contracts from external multiple exchanges which may be used as an independent variable of the algorithm or an input to a constraint variable.” Ex. 2001, 1:46–50.

Independent claims 41 and 43 recite similar claim limitations. *Id.* at 3:22–26, 4:17–20. In the Decision to Institute, we construed the claim phrase “external price feed” as “price data received from outside of the conditional order transaction network.” Dec. 20–22. To support our claim construction, we relied upon two disclosures in the Specification of the ’419 patent. *Id.* at 21 (citing Ex. 1001, 2:64–3:2 (“orders are made . . . as a product of the data

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originating outside of the system, i.e., external data sources”), 5:56–60 (“[the CORE trading engine] receive[s] data, from some external source”).

In its Patent Owner Response, 5th Market attempts to clarify what “outside” the network means in the context of the ’419 patent. PO Resp. 9–10. 5th Market asserts that “outside” the network means either a marketplace trading, but not aggregating orders for, the same securities or items as the originating CORE trading engine illustrated, e.g., in Figure 1 of the ’419 patent, or a diverse marketplace, i.e., one trading securities or items not traded or aggregated by the same originating CORE trading engine. *Id.* at 10. To support this assertion, 5th Market relies upon the testimony of its expert witness, Dr. Terry Rickard, as well as the district court’s claim construction of the term “external.” *Id.* (citing Ex. 2008 ¶ 28; Ex. 1006, 3). In its Reply, CME does not propose an alternative claim construction for the claim phrase “external price feed,” nor does CME attempt to clarify what “outside” the network means in the context of the ’419 patent.

We are not persuaded by 5th Market’s proposed claim construction of the claim phrase “external price feed” because its construction of “outside” the network is overly narrow. 5th Market does not direct us to a disclosure in the Specification of the ’419 patent that suggests “outside” the network should be limited to a marketplace trading, but not aggregating orders for, the same securities or items as the originating CORE trading engine, or a diverse marketplace that does not trade or aggregate the same securities or items, as the originating CORE trading engine. If a feature is not necessary to give meaning to what the inventor means by a claim term, it would be

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“extraneous,” and should not be read into the claim. *Renishaw PLC v. Marposs Societa’ per Azioni*, 158 F.3d 1243, 1249 (Fed. Cir. 1998); *E.I. du Pont de Nemours & Co. v. Phillips Petroleum Co.*, 849 F.2d 1430, 1433 (Fed. Cir. 1988). We decline to adopt 5th Market’s construction of “outside” the network as the broadest reasonable interpretation, as it would import extraneous limitations into the claims, and it would be inconsistent with the Specification of the ’419 patent. 5th Market’s attempt to limit “outside” the network to the two types of marketplaces identified above is not necessary to give meaning to the claim phrase “external price feed,” and should not be read into the claims that recite this feature.

We maintain that the broadest reasonable interpretation of the claim phrase “external price feed” is “price data received from outside of the conditional order transaction network.” As we explained in the Decision to Institute (Dec. 20–22), this claim construction is consistent with the ordinary and customary meaning of “external,” as would be understood by one with ordinary skill in the art, in light of the ’419 patent.

3. “means for comparing” (claim 1)

Independent claim 1 recites, in relevant part, “means for matching or comparing, in accordance with the constraints and the conditions, algorithmic buy/sell orders with algorithmic or non-algorithmic sell/buy orders through use of the external multiple data sources.” Ex. 2001, 1:57–61. As we explained in the Decision to Institute, because the claim phrase “means for matching or comparing” includes alternative language, i.e., “or,” it includes two alternative functions that should be addressed separately.

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Dec. 16. The parties do not dispute our construction of the claim phrase “means for matching,” which is reproduced in the table above. The dispute between the parties centers on the claim phrase “means for comparing.”

With respect to “means for comparing,” we note that the parties do not dispute that it is a means-plus-function limitation. As we indicated in the Decision to Institute, this claim phrase uses the term “means for,” the term “means for” is modified by functional language—namely, “comparing”—and the term “means for” is not modified by sufficient structure recited in the claim to perform the recited function of “comparing.”

Dec. 16. Upon reviewing the portions of the Specification of the ’419 patent cited by 5th Market in its Preliminary Response that purportedly identify the corresponding structure that performs the recited function of “comparing” (Ex. 1001, 13:44–14:45, 15:11–19, Figs. 3, 4), we determined that the Specification fails to disclose sufficient structure. Dec. 17–18. As a result, we construed “means for comparing” as simply a computer programmed to compare data. *Id.* at 18.

In its Patent Owner Response, 5th Market directs us to another disclosure in the ’419 patent that purportedly identifies the corresponding structure for performing the recited function of “comparing.” PO Resp. 76–77 (citing Ex. 1001, 17:20–18:20—i.e., “Table 1”). In particular, 5th Market argues that the CORE trading engine disclosed, e.g., in Figure 1 of the ’419 patent, is tantamount to a general purpose computer. *Id.* 5th Market then argues that Table 1 of the ’419 patent discloses conditions, such as price, quantity, minimum quantity, cap, and a collar kill, which collectively define

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an algorithm that compares orders. *Id.* at 77. 5th Market also asserts that the description of the CORE trading engine in the '419 patent, along with the conditions specified in Table 1, amounts to a special purpose computer for performing the recited function of “comparing.” *Id.* at 77–78 (citing Ex. 2008 ¶¶ 86, 87).

In its Reply, CME contends that the Specification of the '419 patent does not disclose an algorithm for performing the recited function of “comparing.” Pet. Reply 15. CME argues that, at best, Table 1 of the '419 patent discloses the types of orders that may be handled by the CORE trading engine, but this, by itself, is not sufficient to satisfy the requirements of 35 U.S.C. § 112 ¶ 6. *Id.*

When construing a means-plus-function limitation under 35 U.S.C. § 112 ¶ 6,³ the corresponding structure of a means-plus-function limitation must be more than simply a general-purpose computer or microprocessor to avoid impermissible functional claiming, unless certain narrow exceptions concerning generic computer functions apply. *Aristocrat Techs. Austl. Pty Ltd. v. Int'l Game Tech.*, 521 F.3d 1328, 1333 (Fed. Cir. 2008); *see In re Katz Interactive Call Proc. Patent Litig.*, 639 F.3d 1303, 1316 (Fed. Cir. 2011). That is, the specification must disclose “enough of an algorithm to provide the necessary structure under § 112, ¶ 6” or a disclosure that can be

³ Section 4(c) of the AIA re-designated 35 U.S.C. § 112 ¶ 6 as 35 U.S.C. § 112(f). Nonetheless, because the '419 patent has a filing date before September 16, 2012 (the effective date of the AIA), we refer to the pre-AIA version of 35 U.S.C. § 112.

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expressed in any understandable terms, e.g., a mathematical formula, in prose, or as a flowchart. *Finisar Corp. v. The DirectTV Grp., Inc.*, 523 F.3d 1323, 1340 (Fed. Cir. 2008). Simply reciting a claimed function in the specification, and saying nothing about how the computer or processor ensures that such a function is performed, is not a sufficient disclosure for an algorithm which, by definition, must contain a sequence of steps.

Blackboard, Inc. v. Desire2Learn, Inc., 574 F.3d 1371, 1384 (Fed. Cir. 2009).

According to the Specification of the '419 patent, Table 1 includes conditions that are available for input by subscribers, viewable by other subscribers, and executed by the system's trading engine, e.g., the CORE trading engine illustrated in Figure 1. Ex. 1001, 17:20–23. Although the CORE trading engine is tantamount to a general purpose computer, there is no explicit disclosure that explains how the conditions included in Table 1 are used to compare orders. For instance, Table 1 includes, amongst other conditions, price, quantity, minimum quantity, cap, and a collar kill that may be used to compare orders. *Id.* at 17:25–18:20. Table 1, however, does not disclose a well-defined or otherwise recognizable sequence of steps that uses these conditions to compare orders. *See Blackboard*, 574 F.3d at 1384. Absent such a disclosure, we are not persuaded that the Specification of the '419 patent discloses a specific algorithm that transforms an otherwise general purpose computer into a special purpose computer programmed to perform the recited function of “comparing.” *See Finisar*, 523 F.3d at 1340.

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In summary, because Federal Circuit precedent dictates that the corresponding structure for performing a specialized function, as here, cannot just be a general purpose computer, the Specification of the '419 patent fails to disclose sufficient structure for performing the recited function of “comparing.”

B. 35 U.S.C. § 112 ¶ 2 Ground of Unpatentability

1. “means for comparing” (claims 1–23)

CME contends that claims 1–23, each of which recites the claim phrase “means for comparing,” are indefinite under 35 U.S.C. § 112 ¶ 2. Pet. 15–18. CME contends that the Specification of the '419 patent fails to disclose an algorithm for performing the recited function of “comparing” and, therefore, claims 1–23 are indefinite under § 112 ¶ 2. *Id.* (citing Ex. 1005 ¶ 92). In its Preliminary Response, 5th Market first contends that the Specification of the '419 patent provides several disclosures, including diagrams, that purportedly identify the corresponding structure for performing the recited function of “comparing.” Prelim. Resp. 27–28 (citing Ex. 1001, 13:44–14:45, 15:11–19, Fig. 4). Upon considering CME’s analysis and supporting evidence in the Petition, and taking into account 5th Market’s arguments presented in its Preliminary Response, we determined that it was more likely than not that claims 1–23 are indefinite under § 112 ¶ 2. Dec. 24–27.

In its Patent Owner Response, 5th Market pivots and directs us to different disclosures in the Specification of the '419 patent, particularly the CORE trading engine illustrated in Figure 1 and the conditions specified in

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Table 1, that purportedly identify the corresponding structure for performing the recited function of “comparing.” PO Resp. 76–77 (citing Ex. 1001, 17:20–18:20; Ex. 2008 ¶ 86). 5th Market argues that these disclosures in the Specification collectively amount to a structure in the form of an algorithm that transforms an otherwise general purpose computer into a special-purpose computer programmed to perform the recited function of “comparing.” *Id.* at 77–78 (citing Ex. 2008 ¶ 87). In its Reply, CME contends that the ’419 patent does not disclose an algorithm for comparing orders, nor does it explain how a computer may be programmed to compare algorithmic orders with algorithmic or non-algorithmic orders. Pet. Reply 15.

As we explained in the claim construction section above, upon reviewing the disclosures in the Specification of the ’419 patent relied upon by 5th Market in its Patent Owner Response, the Specification of the ’419 patent fails to disclose sufficient structure for performing the recited function of “comparing.” In other words, the conditions included in Table 1 of the ’419 patent, by themselves, do not set forth a well-defined or otherwise recognizable sequence of steps for comparing orders and, therefore, do not amount to a specific algorithm that transforms an otherwise general purpose computer into a special purpose computer programmed to perform the recited function of “comparing.” *See Blackboard*, 574 F.3d at 1384; *Finisar*, 523 F.3d at 1340. Consequently, we conclude that CME has demonstrated by a preponderance of evidence that claims 1–23, each of

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which recites the claim phrase “means for comparing,” are indefinite under § 112 ¶ 2.

C. 35 U.S.C. § 103(a) Grounds of Unpatentability Based, in Whole or in Part, on the Combination of CFTC and Lupien

In its Petition, CME contends that: (1) claims 1, 2, 4, 6–8, 11, 15, 16, 22, 23, and 41–49 are unpatentable under 35 U.S.C. § 103(a) over the combination of CFTC and Lupien; (2) claims 3 and 5 are unpatentable under 35 U.S.C. § 103(a) over the combination of CFTC, Lupien, and Wilson; (3) claims 9, 10, 12, 14, and 18 are unpatentable under 35 U.S.C. § 103(a) over the combination of CFTC, Lupien, and Grody; (4) claims 13 and 17 are unpatentable under 35 U.S.C. § 103(a) over the combination of CFTC, Lupien, and Dictionary; and (5) claims 19–21 are unpatentable under 35 U.S.C. § 103(a) over the combination of CFTC, Lupien, and Globex User Guide. Pet. 54–77. In support of these asserted grounds of unpatentability, CME relies upon claim charts to explain how the proffered combinations teach the claimed subject matter recited in each of these challenged claims, as well as the Declaration of Dr. Craig Pirrong (Ex. 1005 ¶¶ 119–138) to support its positions. *Id.*

In its Patent Owner Response, 5th Market presents the following arguments: (1) the combination of CFTC and Lupien does not teach using an external price feed to match orders in the manner required by independent claims 1, 41, and 43; (2) CME fails to provide an articulated reason with a rationale underpinning to combine the teachings of CFTC and Lupien; (3) modifying CFTC’s automated order matching system—the NYMEX

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ACCESS system—with Lupien’s external price feed would change CFTC’s principle of operation or otherwise render CFTC inoperable for its intended purpose; (4) the combination of CFTC, Lupien, and Wilson does not teach yield spreads as required by dependent claim 5; (5) the combination of CFTC and Lupien does not teach options as required by dependent claim 15; and (6) the combination of CFTC and Lupien does not teach using at least one price from an external price feed as an independent variable of an algorithm, as required by dependent claims 44, 46, and 48, and an input to the constraint variable, as required by dependent claims 45, 47, and 49. PO Resp. 27–45, 48–71.

We begin our analysis with the principles of law that generally apply to a ground of unpatentability based on obviousness, followed by our determination regarding the knowledge level of a person with ordinary skill in the art, proceeded by brief discussions of CFTC and Lupien, and then we address each of 5th Market’s arguments in turn.

1. Principles of Law

A claim is unpatentable under § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in

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the art; and (4) where in evidence, so-called secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). We also recognize that prior art references must be “considered together with the knowledge of one of ordinary skill in the pertinent art.” *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994) (citing *In re Samour*, 571 F.2d 559, 562 (CCPA 1978)). We analyze the grounds of unpatentability based, in whole or in part, on the combination of CFTC and Lupien with the principles identified above in mind.

2. *Level of Skill in the Art*

In determining the level of skill in the art, various factors may be considered, including “type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field.” *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (citing *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986)). There is evidence in the record before us that reflects the knowledge level of a person with ordinary skill in the art. CME’s expert witness, Dr. Pirrong, attests that a person with ordinary skill in the art would be an individual who possesses the following: (1) a bachelor’s degree in computer science, or another quantitative field such as mathematics, statistics, economics, or finance; (2) two to five years of work experience in any one of the aforementioned areas; and (3) an understanding of the operation of markets for financial instruments, including computerized and electronic markets. Ex. 1005 ¶ 44.

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5th Market's expert witness, Dr. Rickard, offers testimony as to the knowledge level of a person with ordinary skill in the art that is essentially the same as Dr. Pirrong's assessment. Dr. Rickard attests that a person with ordinary skill in the art would be an individual who possesses any one of the following: (1) at least two years of work experience with trading software on one or more securities exchanges or private securities markets, and the ability to describe algorithmic trading to programmers with at least two years of programming experience in a securities exchange or private securities market; or (2) a computer programmer with at least two years of programming experience in the area of trading on a securities exchange or private securities marketplace, as well as a general knowledge of the details of algorithmic trading and the characteristics of data from other marketplaces external to his/her work environment. Ex. 2008 ¶ 8.

In addition, the prior art of record in this proceeding also is indicative of the level of ordinary skill in the art. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001); *GPAC*, 57 F.3d at 1579; *In re Oelrich*, 579 F.2d 86, 91 (CCPA 1978).

3. CFTC

CFTC generally relates to New York Mercantile Exchange ("NYMEX") proposed rules and the rule amendments necessary to implement NYMEX American Computerized Commodity Exchange System

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and Services (“NYMEX ACCESS”). Ex. 1009, 3.⁴ NYMEX ACCESS is an automated order matching system that may be used by NYMEX members and customers trading through NYMEX members to trade futures and options contracts after regular trading hours. *Id.* In addition to the trade execution function, NYMEX ACCESS provides trade reporting and quotation information for NYMEX ACCESS contracts traded via the system. *Id.* at 3–4.

CFTC discloses a NYMEX ACCESS trade matching host that accepts limit orders, i.e., orders to buy or sell a particular number of futures or option contracts in a given commodity and month at a specified price, and spread orders entered at a differential. Ex. 1009, 19. NYMEX ACCESS terminal operators enter orders into the NYMEX ACCESS system using a Trader Work Station. *Id.* at 4, 9. The NYMEX ACCESS trade matching host is coupled to these Trader Work Stations over a network and, therefore, is capable of receiving the orders entered at each station. *Id.* at 4. Orders cannot be entered into the NYMEX ACCESS system for a customer unless the customer provides the following information: (1) Commodity; (2) Contract Month; (3) Buy or Sell; (4) Account Number; (5) Quantity; (6) Limit Price; (7) Clearing Member; (8) Strike Price and Put or Call; and (9) any precondition for entry into the matching system. *Id.* at 20–21.

CFTC discloses at least one example where the price of one security is dependent on the price of another security being traded. For instance, the

⁴ The page numbers referred to in CFTC are the original page numbers located in the top, middle of each page.

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NYMEX ACCESS system may generate implied spread bids and offers by calculating spread differentials based on the current, best prices for each component in the order. Ex. 1009, 28. CFTC also discloses generating conditional bids and offers only if they better the best bids or offers currently in the market. *Id.* at 28–29. These conditional bids and offers adjust as the underlying markets move. *Id.* at 29. If a conditional bid or offer was taken, the NYMEX ACCESS system immediately completes the transaction by buying or selling the number of contracts of securities in accordance with the conditions and constraints entered as part of the order. *Id.*

4. *Lupien*

Lupien generally relates to an automated system for trading securities in financial markets that increases liquidity and depth in such markets by trading portions of normally dormant portfolios, including those with numerous and diverse securities. Ex. 1010, 1:6–11. When discussing the on-line storage devices associated with the automated securities trading system, Lupien discloses that external data is available to clients from securities information vendors. *Id.* at 6:20–22. The external data from securities information vendors may include quote and trade feeds covering current external quotes, trades, and other market data. *Id.* at 9:53–54. As orders are executed, market quotes change, or trades occur in the market, the automated securities trading system updates the market data and portfolio holdings, including cash, and recalculates purchase and sale orders for all relevant securities. *Id.* at 4:32–36.

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5. Claims 1, 41, and 43

In its Petition, CME contends that CFTC teaches all the limitations recited in each independent claim, except “at least one external price feed depicting prices of various securities and contracts from external multiple exchanges which may be used as an independent variable of the algorithm or an input to a constraint variable,” as recited in independent claim 1, and similarly recited in independent claims 41 and 43. Pet. 57–66. CME then turns to Lupien’s automated trading system that makes external market data from securities information vendors available to clients to teach the aforementioned claim limitation. *Id.* at 59, 62, 65 (citing Ex. 1010, 4:32–36, 6:20–22).

To support combining the teachings of CFTC and Lupien, CME contends that “Lupien, combined with CFTC, discloses executing a trade of multiple securities in the same and diverse markets with a single order where the price of one security is responsive to dynamic changes in price of another security or other securities in that order.” Pet. 56 (citing Ex. 1005 ¶ 123). CME argues that “[i]t would have been obvious to one of ordinary skill in the art to modify the NYMEX ACCESS system described in CFTC, based on Lupien, to use external market data in calculating and matching purchase and sale orders.” *Id.* (citing Ex. 1005 ¶ 124).

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a. The Combination of CFTC and Lupien Collectively Teaches Using an External Price Feed to Match Orders in the Manner Required by Independent Claims 1, 41, and 43

Independent claim 1 recites, in relevant part:

at least one external price feed depicting prices of various securities and contracts from external multiple exchanges . . . used as an independent variable of [an] algorithm or an input to a constraint variable . . . and . . . matching . . . in accordance with the constraints and the conditions, algorithmic buy/sell orders with algorithmic or non-algorithmic sell/buy orders through use of the external multiple data sources.

Ex. 2001, 1:46–61 (emphasis omitted). Independent claims 41 and 43 recite similar limitations. *Id.* at 3:22–32, 3:61–4:2, 4:16–32. Independent claim 41 also recites “a traded item being an option in a form of an algorithm with constraints thereon that represent a willingness to transact, where price of the traded item is a dependent variable of the algorithm within the constraints and dynamically changing price of another item is an independent variable.” *Id.* at 3:8–13 (bracketing and emphases omitted).

In its Patent Owner Response, 5th Market contends that CFTC’s NYMEX ACCESS system only operates outside regular trading hours, merely supplements open outcry trading, employs strict price/time priority rules, eliminates legging risk, does not support option spreads, and does not attempt to create conditional bids or offers for the various legs of inter-market spreads in underlying future markets. *See* PO Resp. 27–33. Based on these contentions, 5th Market asserts that CFTC does not teach using an external price feed to match orders in the manner required by independent

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claims 1, 41, and 43. *Id.* at 33–34. Next, 5th Market contends that Lupien does not disclose multi-legged trades that require multiple conditional trades executed together, but instead simply discloses buying or selling a quantity of an individual security with no conditional orders. *Id.* at 35. 5th Market then asserts that Lupien does not teach using an external price feed to match orders in the manner required by independent claims 1, 41, and 43. *Id.* at 35–36.

In its Reply, CME contends that 5th Market’s arguments focus on the teachings of CFTC and Lupien individually, and do not address the combined teachings of these references. Pet. Reply. 2. CME argues that these arguments should be found unpersuasive for the same reasons they were found unpersuasive in the Decision to Institute. *Id.* (citing Dec. 31–33).

5th Market’s arguments directed to the separate teachings of CFTC and Lupien are misplaced. When assessing obviousness, the test is what the combined teachings of the references would have taught or suggested to one with ordinary skill in the art. *In re Young*, 927 F.2d 588, 591 (Fed. Cir. 1991). In its Petition, CME does not rely upon CFTC to teach an external price feed, nor does CME rely upon Lupien to teach spread orders. Instead, CME relies upon the combined teachings of CFTC and Lupien. That is, CME takes the position that CFTC’s NYMEX ACCESS system, which matches future contracts, option contracts, and spread orders entered at a differential (Ex. 1009, 19, 28–34), in conjunction with the aspect of Lupien’s automated trading system that makes external market data available to its

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clients (Ex. 1010, 4:32–36, 6:20–22), collectively teaches using external market data to match orders in the manner required by independent claims 1, 41, and 43. *See* Pet. 57–66.

With respect to independent claim 41 only, we understand 5th Market as contending that the limitation regarding “a traded item being an option in a form of an algorithm with constraints thereon that represent a willingness to transact” to require that the traded item be an option spread order. PO Resp. 31, 33, 52–53. In particular, 5th Market argues that the aforementioned limitation includes algorithmic orders involving options, e.g., an option spread order. *Id.* at 53 (citing Ex. 2008 ¶ 23). 5th Market asserts that, because CFTC’s NYMEX ACCESS system does not possess the functionality to trade option spread orders, CFTC, even if combined with Lupien, does not teach this limitation recited in independent claim 41. *Id.* at 31, 53 (citing Ex. 1009, 34).

5th Market’s argument is not commensurate in scope with the limitation at issue. 5th Market’s argument is predicated on the notion that independent claim 41 requires that the traded item be “an option spread order.” 5th Market and its expert witness, Dr. Rickard, nonetheless readily admit that an option spread order is merely one example of algorithmic orders involving options. PO Resp. 53; *see* Ex. 2008 ¶ 23. Narrowly confining the limitation at issue in independent claim 41 to an option spread order, without considering other orders that may fall within the purview of algorithmic orders involving options, would be contrary to affording this claim its broadest reasonable interpretation. *See* 37 C.F.R. § 42.300(b).

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In its Petition, CME contends that the orders entered into the NYMEX ACCESS system are in the form of an algorithm with constraints, such as quantity, limit prices, strike price and put or call, and any precondition for entry into the system. Pet. 60–61 (citing Ex. 1009, 20–21). CME also argues that CFTC’s NYMEX ACCESS system matches spread orders at a differential. *Id.* at 61–62 (citing Ex. 1009, 28, 30–31). Based on these cited disclosures, we are satisfied that CFTC teaches algorithmic orders involving options, as required by independent claim 41.

Based on the record before us, we are persuaded that CME presents sufficient evidence to support a finding that the combination of CFTC and Lupien teaches all the limitations recited in independent claims 1, 41, and 43.

b. CME Provides a Sufficient Rationale to Combine the Teachings of CFTC and Lupien

In its Patent Owner Response, 5th Market contends the CME’s rationale to combine the teachings of CFTC and Lupien is ambiguous, generic, and conclusory. PO Resp. 43. 5th Market argues that the portions of Dr. Pirrong’s testimony relied upon by CME to support its rationale to combine these references does not reveal how, or why, one with ordinary skill in the art would add Lupien’s external price feed to CFTC’s NYMEX ACCESS system. *Id.* at 45.

In its Reply, CME contends that using external price feeds in electronic trading systems was old and well-known in the art prior to the ’419 patent. Pet. Reply 3. To support its argument that traders have long

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used price and other data from various sources, including external markets, as a basis for developing trading strategy and making trades, CME relies upon the cross-examination testimony of Dr. Pirrong. *Id.* (citing Ex. 2007, 102:21–104:16, 163:10–13, 165:3–4).

The Supreme Court has held that “[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *KSR*, 550 U.S. at 416. The Court further instructs that:

[o]ften it will be necessary for a court to look to interrelated teachings of multiple [references]; . . . and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.

Id. at 418. The Court also notes that a person of ordinary skill in the art is “a person of ordinary creativity, not an automaton,” and “will be able to fit the teachings of multiple [references] together like pieces of a puzzle.” *Id.* at 420–21.

As we explained previously, CFTC discloses that the NYMEX ACCESS system trades spread orders at a differential (Ex. 1009, 19, 28–34), and Lupien discloses that its automated trading system makes external market data, particularly price, available to its clients (Ex. 1010, 4:32–36, 6:20–22). With respect to the background knowledge possessed by one with ordinary skill in the art prior to the ’419 patent, we credit the testimony of Dr. Pirrong elicited during his cross-examination. In response to a question

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regarding what one with ordinary skill in the art in 1992 would do next to improve CFTC's NYMEX ACCESS system, Dr. Pirrong states that "one of the most import things about trading and traders is information. And so providing more information to traders and providing information in a more . . . convenient and easy-to-understand format would have been an important consideration." Ex. 2007, 102:22–103:4.

In considering the entirety of the record before us, we are persuaded by CME's assertion that "[i]t would have been obvious to one of ordinary skill in the art to modify the NYMEX ACCESS system described in CFTC, based on Lupien, to use external market data in calculating and matching purchase and sale orders." Pet. 56 (citing Ex. 1005 ¶ 124). In particular, we are satisfied that one with ordinary skill in the art would have recognized that adding Lupien's external price feed to CFTC's NYMEX ACCESS system would provide a prospective trader with more information to develop trading strategies and, as a result, provide the trader a better opportunity to successfully complete trades. In that respect, instead of presenting a rationale to combine that is conclusory in nature as asserted by 5th Market, CME has provided an articulated reason with rational underpinnings in urging that an ordinarily skilled artisan would have added Lupien's external price feed to CFTC's NYMEX ACCESS system so as to allow a prospective trader to execute orders across multiple markets. *See* Pet. 56; Ex. 1005 ¶ 123.

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c. Adding Lupien's External Price Feed to CFTC's NYMEX ACCESS System Would Not Change CFTC's Principle of Operation or Otherwise Render CFTC Inoperable for its Intended Use

1. Price and Time Priority Rule

In its Patent Owner Response, 5th Market contends that one fundamental principle of operation of CFTC's NYMEX ACCESS system is trading with price and time priority. PO Resp. 49 (citing Ex. 1009, 7, 24–25; Ex. 2007, 93–94), 68, 69–70. According to 5th Market, price and time priority is a rule that indicates price is the first priority, and time is the second priority. *Id.* at 49 (citing Ex. 2008 ¶ 16). 5th Market argues that adding Lupien's external price feed to CFTC's NYMEX ACCESS system would create the possibility of violating the price and time priority rule. *Id.* (citing Ex. 2008 ¶ 80).

In its Reply, CME contends that 5th Market's expert witness, Dr. Rickard, indicated during cross-examination that a person with ordinary skill in the art is capable of programming a price and time priority rule in an automated order matching system. Pet. Reply 9 (citing Ex. 1021, 21:14–22). CME then argues that adding Lupien's external price feed to CFTC's NYMEX ACCESS system would not have introduced any price and time priority issues that a person of ordinary skill in the art could not have recognized and accounted for. *Id.*

For at least two reasons, we are not persuaded by 5th Market's argument that adding Lupien's external price feed to CFTC's NYMEX ACCESS system would violate CFTC's price and time priority rule. First,

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we are not convinced that CFTC's price and time priority rule is a fundamental principle of operation of the NYMEX ACCESS system. As we explained previously, CFTC generally relates to an automated order matching system referred to as NYMEX ACCESS. Ex. 1009, 3. Of particular importance here is that CFTC's NYMEX ACCESS system includes a trade matching host that accepts limit orders, such as orders for future contracts, option contracts, and spread orders entered at a differential. *Id.* at 19. Based on these disclosures, the principle of operation that more accurately epitomizes CFTC is using the NYMEX ACCESS system to match orders.

Second, although CFTC discloses that the NYMEX ACCESS system executes orders for future and option contracts based on a set of rules, one of which is price and time priority (Ex. 1009, 23–25), 5th Market does not explain adequately how the price and time priority rule also applies to trading spread orders at a differential. There is no indication in CFTC that the same price and time priority rule would apply when trading spread orders at a differential. *See* Ex. 1009, 27–34. As such, one of ordinary skill in the art would have recognized that a price and time priority rule is not a critical or essential aspect of CFTC's NYMEX ACCESS system because such a rule would have varied depending on the specific type of order executed by the system. Nonetheless, even if we were to assume that the price and time priority rule applies equally to trading spread orders at a differential, 5th Market does not provide sufficient or credible evidence that explains why programming the price and time priority rule in CFTC's

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NYMEX ACCESS system to account for Lupien's external price feed would be uniquely challenging or otherwise beyond the level of an ordinary skilled artisan. *See Leapfrog Enters., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1161–62 (Fed. Cir. 2007) (holding that Leapfrog had not presented evidence that the proposed modification was “uniquely challenging or difficult for one of ordinary skill in the art” or “represented an unobvious step over the prior art”).

2. *Legging Risk*

In its Patent Owner Response, 5th Market contends that another fundamental principle of operation of CFTC's NYMEX ACCESS system is executing spread orders without legging risk. PO Resp. 50, 68 (citing Ex. 1009, 29). 5th Market argues that adding Lupien's external price feed to CFTC's NYMEX ACCESS system would create the possibility of introducing legging risk to a spread order where no such risk previously existed. *Id.* at 50–51 (citing Ex. 2008 ¶ 79).

In its Reply, CME contends that the portion of CFTC relied upon by 5th Market does not indicate that the NYMEX ACCESS system completely eliminates legging risk in its electronic trades, but instead the legging risk CFTC addresses is the completion of a spread order during open outcry trading. Pet. Reply. 11 (citing Ex. 1009, 29). CME argues that there is a potential for more latency in open outcry trading because it involves shouting and hand signaling to traders across a trading pit. *Id.* CME further argues that CFTC does not assert that the NYMEX ACCESS system eliminates legging risk altogether. *Id.* at 11–12. To support this argument,

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CME directs us to the cross-examination of 5th Market's expert witness, Dr. Rickard, during which he purportedly admits that, in the context of electronic trading, although there is some machine latency involved in processing trades, trades generally are considered to be executed simultaneously. *Id.* at 12 (citing Ex. 1021, 29:20–30:23, 56:6–10).

We are not persuaded by 5th Market's argument that adding Lupien's external price feed to CFTC's NYMEX ACCESS system would introduce legging risk to a spread order where no such risk previously existed. When discussing how the NYMEX ACCESS system would treat both legs of a spread order as a single event, CFTC discloses that the NYMEX ACCESS system "would eliminate the risk, inherent in legging into a spread during open outcry trading, that once a position in one leg was established the other leg of the spread could no longer be executed at the appropriate price." Ex. 1009, 29. This disclosure does not contemplate that the NYMEX ACCESS system necessarily eliminates legging risk associated with processing a spread order altogether. Instead, we agree with CME that this disclosure only addresses how completing a spread order using the NYMEX ACCESS system would reduce the latency associated with completing the same spread order during open outcry trading.

Moreover, we credit Dr. Rickard's cross-examination testimony that there is at least some machine latency associated with processing orders in an automated order matching system. *See, e.g.*, Ex. 1021, 29:20–30:23, 56:6–10. As evidenced by this testimony, there is at least some acceptable level of machine latency associated with processing a spread order in

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CFTC's NYMEX ACCESS system. 5th Market does not provide sufficient or credible evidence that explains how adding Lupien's external price feed to CFTC's NYMEX ACCESS system adversely impacts this acceptable level of machine latency, or otherwise prevents a trader from using the NYMEX ACCESS system to complete a spread order with minimal legging risk.

3. Liquidity in the Marketplace

In its Patent Owner Response, 5th Market contends that adding Lupien's external price feed to CFTC's NYMEX ACCESS system would reduce the liquidity of CFTC's marketplace because it would divert orders to external markets. PO Resp. 70. To support this argument, 5th Market directs us to Dr. Rickard's testimony that one of ordinary skill in the art "would have considered any scheme to modify an exchange marketplace so as to route some of its order flow to external markets to be contrary to the vested interest of the exchange regarding its market liquidity, i.e., it would not have been considered obvious to pursue." Ex. 2008 ¶ 38.

In its Reply, CME contends that the aforementioned testimony from Dr. Rickard is contradicted by statements he made in other patent applications and patents where he is one of the named inventors. Pet. Reply. 13 (citing Ex. 1023, 1:55–60; Exs. 1024–1027). CME also argues that using an external market price is a benefit to the liquidity of the marketplace receiving the price because the receiving marketplace experiences more trading activity and enhanced trading volume. *Id.* at 14 (citing Ex. 2007, 100:5–21).

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We are not persuaded by 5th Market's argument that combining the teachings of CFTC and Lupien would reduce the liquidity of CFTC's marketplace by diverting orders to external markets. 5th Market does not identify clearly the principle of operation that would be changed in CFTC if Lupien's external price feed were added to CFTC's NYMEX ACCESS system. Although increasing liquidity may be an overall goal that each marketplace strives to achieve, other than the testimony offered by Dr. Rickard, there is no other evidence in the record before us that adding external market data to a marketplace would prevent that marketplace from increasing its liquidity. Instead, as we explained above, we credit Dr. Pirrong's cross-examination testimony that an important consideration when looking to improve CFTC's NYMEX ACCESS system is providing traders with more information. *See* Ex. 2007, 102:22–103:4. Applying this testimony to 5th Market's argument regarding reduced liquidity, Dr. Pirrong suggests that adding more information, such as external market data, to a given marketplace would be an improvement in the sense that it promotes liquidity, rather than reduces it.

Even if we assume that a fundamental principle of operation in CFTC's NYMEX ACCESS system is increasing liquidity in its marketplace, we do not credit Dr. Rickard's testimony that one of ordinary skill in the art would have considered any scheme to modify CFTC's marketplace so as to route some of its order flow to external markets to be undesirable. *See* Ex. 2008 ¶ 38. Dr. Rickard's testimony, by itself, suggests that one of ordinary skill in the art would never have a sufficient or credible reason for

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incorporating external market data into a marketplace. Dr. Rickard, however, fails to appreciate that an obviousness evaluation is not determined on the basis of absolutes, such as “any” or “never.” One with ordinary skill in the art would have been cognizant of trade-offs, i.e., less of this is offset by more of that, and vice-versa.

Our obviousness evaluation in this case requires us to consider the teachings of CFTC and Lupien together with the knowledge of one of ordinary skill in the pertinent art. *See Paulsen*, 30 F.3d at 1480. We also recognize that CFTC and Lupien must be considered for everything they teach by way of technology and are not limited to the particular invention each reference is describing and attempting to protect. *See EWP Corp. v. Reliance Universal Inc.*, 755 F.2d 898, 907 (Fed. Cir. 1985). There is at least some evidence in the record before us that suggests one of ordinary skill in the art would have appreciated that adding Lupien’s external market data to CFTC’s marketplace would be beneficial because it provides the marketplace with more trading activity and an enhanced trading volume. *See Ex. 2007*, 102:22–103:4, 100:5–21.

d. CME’s Expert Witness, Dr. Pirrong, Does Not Attempt to “Backfill” the Testimony Provided in His Declaration Supporting the Petition by Proposing New Approaches to Combine the Teachings of CFTC and Lupien During Cross-examination

In its Patent Owner Response, 5th Market contends that during the cross-examination of CME’s expert witness, Dr. Pirrong, he attempts to “backfill” the testimony provided in his Declaration supporting the Petition by proposing new approaches for adding Lupien’s external price feed to

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CFTC's NYMEX ACCESS system. PO Resp. 17–18 (citing Ex. 2007, 146:4–5, 165:2–5, 165:8–13, 166:6–7, 166:8–11, 177–181), 46–48. Dr. Pirrong was not attempting to introduce new approaches for combining the teachings of Lupien and CFTC to bolster the rationale to combine discussed in the Petition, but instead simply was responding to questions posed by 5th Market's counsel. As we discussed previously, CME provides a sufficient rationale to combine the teachings of CFTC and Lupien in the Petition, itself. We did not rely upon the aforementioned portions of Dr. Pirrong's cross-examination testimony when determining whether CME's Petition provides a sufficient rationale to combine these references. In other words, the portions of Dr. Pirrong's cross-examination testimony cited by 5th Market do not "backfill" the rationale to combine the teachings of CFTC and Lupien set forth by CME in its Petition or otherwise undermine that rationale. 5th Market's arguments in that regard are misplaced because they focus on these approaches as though they were articulated and relied upon in the Petition.

5th Market further contends that there is no guidance in the prior art references, themselves, on how to add Lupien's external price feed to CFTC's NYMEX ACCESS system. PO Resp. 18. The approaches elicited from Dr. Pirrong during cross-examination, however, are not a rebuttal to this contention. Of particular importance for this contention is what 5th Market does not assert. 5th Market does not assert that one of ordinary skill in the art would not have known how to add Lupien's external price feed to CFTC's NYMEX ACCESS system. It is well-settled that "[a] suggestion,

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teaching, or motivation to combine the relevant prior art teachings does not have to be found explicitly in the prior art.” *In re Kahn*, 441 F.3d 977, 987–88 (Fed. Cir. 2006). As we explained in the section discussing the rationale to combine the teachings of CFTC and Lupien, one of ordinary skill in the art would have appreciated that adding Lupien’s external price feed to CFTC’s NYMEX ACCESS system would provide a prospective trader with more information to develop trading strategies and, as a result, provide the trader a better opportunity to successfully complete trades. *See supra* II(C)(5)(b).

5th Market also attempts to distinguish the limitations recited in independent claims 1, 41, and 43 from each of the approaches elicited from Dr. Pirrong during his cross-examination. PO Resp. 22–26, 51–57. As we explained above, these approaches were not presented in the Petition or in the accompanying Declaration of Dr. Pirrong. Indeed, we did not consider these approaches when determining whether the asserted grounds of unpatentability based, in whole or in part, on the combination of CFTC and Lupien satisfy the “more likely than not” threshold standard for instituting a covered business method patent review. 35 U.S.C. § 324(a); 37 C.F.R. § 42.208(c).

Moreover, as we discussed previously, CME presents sufficient evidence in its Petition to support a finding that the combination of CFTC and Lupien teaches all the limitations recited in independent claims 1, 41, and 43. *See supra* II(C)(5)(a). 5th Market’s attempt to distinguish the new approaches elicited from Dr. Pirrong during cross-examination from the

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limitations recited in independent claims 1, 41, and 43 does not undermine the evidence presented by CME in its Petition or otherwise render Dr. Pirrong's supporting testimony provided in the accompanying Declaration less persuasive.

e. Summary

Based on the record before us, we conclude that CME has demonstrated by a preponderance of the evidence that independent claims 1, 41, and 43 would have been obvious over the combination of CFTC and Lupien.

6. Claims 2–4, 6–14, 16–23, and 42

5th Market does not challenge the contentions and supporting evidence regarding dependent claims 2–4, 6–14, 16–23, and 42 that were presented by CME in its Petition. Pet. 70–77; Ex. 1005 ¶¶ 125–138. Upon reviewing CME's contentions and supporting evidence, we are persuaded that it presents sufficient evidence to support a finding that the cited prior art references teach the claimed subject matter recited in each of these dependent claims. Therefore, based on the record before us, we conclude that CME has demonstrated by a preponderance of the evidence that:

(1) dependent claims 2, 4, 6–8, 11, 16, 22, 23, and 42 would have been obvious over the combination of CFTC and Lupien; (2) dependent claim 3 would have been obvious over the combination of CFTC, Lupien, and Wilson; (3) claims 9, 10, 12, 14, and 18 would have been obvious over the combination of CFTC, Lupien, and Grody; (4) claims 13 and 17 would have been obvious over the combination of CFTC, Lupien, and Dictionary; and

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(5) claims 19–21 would have been obvious over the combination of CFTC, Lupien, and Globex User Guide.

7. *Claim 5*

Dependent claim 5 recites “[t]he conditional order transaction network of claim 2 wherein the price is a yield spread.” Ex. 2001, 2:3–4.

In its Petition, CME contends that the combination of CFTC, Lupien, and Wilson teaches this limitation. Pet. 70–71. In particular, CME argues that Wilson discloses an advertisement for BondNet Trading Systems that indicates its comprehensive transaction system allows a trader to trade on price, yield, or spreads. *Id.* (citing Ex. 1011, 22; Ex. 1005 ¶¶ 126, 127). Based on the cited disclosure in Wilson, along with the supporting testimony from Dr. Pirrong, CME asserts that it would have been obvious to implement price as a yield spread. *Id.* CME further contends that, because Wilson’s BondNet Trading System and CFTC’s NYMEX ACCESS system are both trading systems that offer similar functionality, they are capable of being combined. *Id.*

In its Patent Owner Response, 5th Market contends that Wilson does not teach yield spreads, as required by dependent claim 5. PO Resp. 58. 5th Market argues that the disclosure in Wilson relied upon by CME separates the words “yield” and “spread” by a comma and the word “or,” and, therefore, does not indicate that these words are part of the same multi-word noun phrase, such as “yield spread.” *Id.* (quoting Ex. 1011, 22). 5th Market also argues that CME does not provide an articulated reason with a rational

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underpinning to combine Wilson's one-page advertisement for BondNet with the teachings of CFTC and Lupien. *Id.* at 59–60.

We are not persuaded that CME has presented sufficient evidence to support a finding that Wilson teaches a yield spread, as claimed. Although the cited disclosure in Wilson offsets the words “yield” and “spread” by a comma and the word “or” (Ex. 1011, 22), it does not contemplate that these two words may be used in combination to achieve a “yield spread.” We have reviewed Dr. Pirrong's supporting testimony and he simply repeats the arguments made by CME in its Petition. Ex. 1005 ¶¶ 126, 127. Dr. Pirrong does not offer an explanation from the perspective of one with ordinary skill in the art as to how the disclosure of “yield” and “spread” in Wilson may be combined to achieve a “yield spread.”

We also are not persuaded that CME provides a sufficient rationale to combine the teachings of CFTC, Lupien, and Wilson. The rationale for combining the teachings of CFTC and Wilson offered by CME indicates, at best, that these prior art references are analogous art to each other. The fact that the prior art references are analogous art, however, does not suffice as an articulated reason with a rational underpinning to combine CFTC, Lupien, and Wilson. The relevant inquiry for a ground of unpatentability based on obviousness is whether the petitioner has set forth “some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *KSR*, 550 U.S. at 418. Notably absent from CME's rationale for combining CFTC, Lupien, and Wilson is a credible and

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sufficient explanation of how these references might be combined to arrive at “price is a yield spread,” as recited in dependent claim 5.

Based on the record before us, we conclude that CME has not demonstrated by a preponderance of the evidence that dependent claim 5 would have been obvious over the combination of CFTC, Lupien, and Wilson.

8. *Claim 15*

Dependent claim 15 recites, “[t]he conditional order transaction network of claim 1 wherein the security instrument for which the order is entered includes options.” Ex. 2001, 2:29–31.

In its Petition, CME contends that CFTC’s NYMEX ACCESS system trades future and option contracts, and, therefore, teaches options, as required by dependent claim 15. Pet. 33 (citing Ex. 1009, 2, 19).⁵ In its Patent Owner Response, 5th Market argues that the options feature recited in dependent claim 15 requires the order to be an option order in the form of an algorithm, e.g., an option spread. PO Resp. 60. 5th Market then asserts that, because CFTC’s NYMEX ACCESS system does not possess the functionality to trade options spreads at a differential, CFTC, even if combined with Lupien, does not teach the options feature recited in dependent claim 15. *Id.* (citing Ex. 1009, 34).

⁵ CME directs us to the claim chart regarding the ground of unpatentability based on the combination of CFTC and Miller, which was not instituted in this proceeding, only to explain how CFTC teaches the limitations recited in dependent claims 2, 4, 6–8, 11, 15, 16, 22, 23, and 42. Pet. 56 n.10.

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5th Market's argument is not commensurate in scope with the limitation at issue. 5th Market's argument is predicated on the notion that dependent claim 15 requires "an option spread order." Dependent claim 15, however, only requires that "the security instrument for which the order is entered includes options." Dependent claim 15 does not recite an option order in the form of an algorithm, much less include the words "option spread." Upon ascertaining the proper scope of independent claim 15, we are persuaded that CME presents sufficient evidence to support a finding that CFTC teaches the options feature recited in dependent claim 15. That is, CFTC discloses that the NYMEX ACCESS system accepts limit orders, including option contracts. Ex. 1009, 2, 19.

Based on the record before us, we conclude that CME has demonstrated by a preponderance of the evidence that dependent claim 15 would have been obvious over the combination of CFTC and Lupien.

9. Claims 44–49

Dependent claim 44 recites, in relevant part, "at least one price depicted by the at least one external price feed is used as the independent variable of the algorithm." Ex. 2001, 4:38–40. Dependent claims 46 and 48 recite the same limitation. *Id.* at 4:49–51, 4:58–60. Dependent claim 45 recites, in relevant part, "at least one price depicted by the at least one external price feed is used as the input to the constraint variable." *Id.* at 4:43–44. Dependent claims 47 and 49 recite the same limitation. *Id.* at 4:54–55, 4:63–64.

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In its Petition, CME contends that CFTC's NYMEX ACCESS system, which matches spread orders entered at a differential, in conjunction with the aspect of Lupien's automated trading system that makes external market data available to its clients, teaches using price as both "the independent variable of the algorithm," as recited in dependent claims 44, 46, and 48, and "the input to the constraint variable," as recited in dependent claims 45, 47, and 49. Pet. 66–70 (citing Ex. 1009, 28–31; Ex. 1010, 4:32–36, 6:20–22). In its Patent Owner Response, 5th Market contends that CME relies upon the same portions of Lupien to teach both of the aforementioned limitations. PO Resp. 61–63 (citing Pet. 67–69, Ex. 1010, 4:32–36, 6:20–22). 5th Market further argues that the disparate disclosures in Lupien relied upon by CME do not disclose, much less draw a distinction between, using a price as an independent variable of an algorithm and inputting the price as the constraint variable. *Id.* at 63.

Once again, 5th Market's arguments directed to the individual teachings of Lupien are misplaced. When assessing obviousness, the test is what the combined teachings of the references would have taught or suggested to one with ordinary skill in the art. *Young*, 927 F.2d at 591. In its Petition, CME does not rely solely upon Lupien to teach using price as an independent variable of an algorithm and inputting price as the constraint variable, but instead relies upon the combined teachings of CFTC and Lupien. That is, CME takes the position that CFTC's NYMEX ACCESS system, which matches spread orders entered at a differential (Ex. 1009, 28–31), in conjunction with the aspect of Lupien's automated trading system

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that makes external market data, particularly price, available to its clients (Ex. 1010, 4:32–36, 6:20–22), collectively teach using price as an independent variable of an algorithm in the manner required by dependent claims 44, 46, and 48, and inputting price as the constraint variable in the manner required by dependent claims 45, 47, and 49. *See* Pet. 66–70.

Moreover, 5th Market does not provide sufficient or credible evidence that explains why, in the context of CFTC’s NYMEX ACCESS system processing different legs of a spread order, using a price received from an external market, as taught by Lupien, as an independent variable of an algorithm, or inputting the price as the constraint variable of the algorithm, would be uniquely challenging or otherwise beyond the level of an ordinary skilled artisan. *See Leapfrog*, 485 F.3d at 1161–62. We are persuaded that CME has presented sufficient evidence to support a finding that the combination of CFTC and Lupien teaches the claimed subject matter recited in dependent claims 44–49.

Based on the record before us, we conclude that CME has demonstrated by a preponderance of the evidence that dependent claims 44–49 would have been obvious over the combination of CFTC and Lupien.

D. 5th Market’s Motion to Amend

In its Motion to Amend, 5th Market moves to substitute claims 50–72 for challenged claims 1–23 only if we determine that these claims, which recite the claim phrase “means for comparing,” are indefinite under 35 U.S.C. § 112 ¶ 2. Mot. to Amend 1–2. As we explained previously, we determine that CME has demonstrated by a preponderance of evidence that

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the claim phrase “means for comparing” is indefinite because the Specification of the ’419 patent does not disclose sufficient structure for performing the recited function of “comparing.” *See supra* Section II.B (1). Therefore, 5th Market’s Motion to Amend is before us for consideration. For the reasons set forth below, we deny 5th Market’s Motion to Amend.

Proposed substitute claim 50 is an independent claim. Except for the removal of the language “or compare,” proposed substituted claim 50 is the same as challenged independent claim 1. Proposed substituted claim 50 is reproduced below.

50. A conditional order transaction network that matches or compares buy and sell orders for a plurality of security instruments based upon conditions set forth within the order, including price represented as an algorithm with constraints thereon, the transaction network comprising:

a variable number of trader terminals for entering an order for a security instrument in a form of an algorithm with constraints thereon that represent a willingness to transact, where price of one security is a dependent variable of the algorithm within the constraints and dynamically changing price of another security is an independent variable thereof, the price as the dependent variable being continuously changeable responsive to changes in price of the independent variable, the algorithm representing a buy or sell order; and

at least one controller computer coupled to each of the variable number of trader terminals over a communications network and receiving as inputs,

- a) each algorithm with its corresponding constraints, and
- b) at least one external price feed depicting prices of various securities and contracts from external multiple exchanges which may be used as an independent variable of the

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algorithm or an input to a constraint variable, the controller computer comprising,

means for matching, in accordance with the constraints and the conditions, algorithmic buy orders with algorithmic sell orders, one of the conditions being a requirement that two or more securities are tradable contemporaneously as a contingent trade of those respective securities, and

means for matching [or comparing], in accordance with the constraints and the conditions, algorithmic buy/sell orders with algorithmic or non-algorithmic sell/buy orders through use of the external multiple data sources.

Mot. to Amend 3–4 (brackets indicate language 5th Market is seeking to remove). Except for the change in their dependency, proposed substitute claims 51–72 are the same as challenged dependent claims 2–23. *Id.* at 4–8.

A motion to amend claims in a covered business method patent review is not, by itself, an amendment. As the moving party, 5th Market bears the burden of proof to establish that it is entitled to the relief requested. 37 C.F.R. § 42.20(c). As such, 5th Market’s proposed substitute claims 50–72 are not entered automatically, but only upon 5th Market demonstrating by a preponderance of the evidence the patentability of these proposed substitute claims. *See, e.g.*, 37 C.F.R. § 42.1(d) (noting that the “default evidentiary standard [in proceedings before the Board] is a preponderance of the evidence.”).

1. Patentability Over the Prior Art

5th Market bears the burden of proof in demonstrating the patentability of proposed substitute claims 50–72 over the prior art of record, as well as the prior art in general. *See Idle Free Sys., Inc. v. Bergstrom, Inc.*,

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Case IPR2012-00027, Paper 26, 7 (PTAB June 11, 2013). In its Motion to Amend, 5th Market must show that the conditions for novelty and non-obviousness are met for the prior art known to 5th Market. With respect to obviousness as the basis of the potential unpatentability of the proposed substitute claims, 5th Market should present and discuss facts which are pertinent to the first three underlying factual inquiries set forth in *Graham*, which include: (1) the scope and content of the prior art; (2) differences between the claimed subject matter and the prior art; and (3) the level of ordinary skill in the art. *Graham*, 383 U.S. at 17–18. 5th Market should provide some discussion and analysis regarding the specific technical disclosure of the closest prior art known to 5th Market, as well as the level of ordinary skill in the art, in terms of ordinary creativity and the basic skill set of a person of ordinary skill in the art.

Without even reaching whether 5th Market has demonstrated patentability over the prior art in general, we are not persuaded that 5th Market has demonstrated by preponderance of evidence that proposed substitute claim 50 is patentable over the prior art of record. We recognize that 5th Market asserts that its Motion to Amend is contingent only upon our determination that independent claim 1 is indefinite under 35 U.S.C. § 112 ¶ 2. When satisfying the requirement to confer with us prior to filing its Motion to Amend, we instructed 5th Market that it must explain, in detail, how each proposed substitute claim obviates all of the grounds of unpatentability instituted in this proceeding. Paper 19, 2. Our instruction in this regard is based on our rules. Pursuant to 37 C.F.R. § 42.221(a)(2)(ii), a

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motion to amend may be denied where “[t]he amendment does not respond to a ground of unpatentability involved in the trial.” In this case, because independent claim 1 is involved in more than one instituted grounds of unpatentability, 5th Market cannot simply select one ground and explain how its proposed substitute claim obviates that ground. Instead, when seeking to amend independent claim 1, 5th Market must explain how its amendment obviates each ground of unpatentability instituted in the proceeding that involves independent claim 1—in this case, both the ground of unpatentability based on 35 U.S.C. § 112 ¶ 2 and the ground of unpatentability based on 35 U.S.C. § 103(a).

5th Market contends that, because its proposed amendment only seeks to remove the language “or compare” from independent claim 1, the arguments presented by 5th Market in its Patent Owner Response against independent claim 1 fully traverse any grounds of unpatentability under 35 U.S.C. § 103(a) that would have applied to proposed substitute claim 50. Mot. to Amend. 12. As we explained previously, because the claim phrase “means for matching or comparing” recited in independent claim 1 includes alternative language, i.e., “or,” it includes two alternative functions. The prior art need only satisfy the “means for matching” limitation, along with the other limitations recited in independent claim 1, to render the claim unpatentable. Therefore, even if we were to enter 5th Market’s amendment that removes the language “or compare” from independent claim 1, the combined teachings of CFTC and Lupien still would have rendered proposed substitute claim 50 unpatentable. *See supra* Section II.C (5)(a–e).

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In any event, we note that our rules prohibit incorporating arguments by reference. Pursuant to 37 C.F.R. § 42.6(a)(3), “[a]rguments must not be incorporated by reference from one document into another document. Combined motions, oppositions, replies, or other combined documents are not permitted.” 5th Market is precluded from incorporating arguments regarding the patentability of independent claim 1 from its Patent Owner Response into its Motion to Amend to address how proposed substitute claim 50 is patentable distinction from the prior art of record. Such incorporation by reference circumvents our rule limiting the pages in a motion to amend to fifteen pages. *See* 37 C.F.R. § 42.24(a)(v). Arguments that are not developed and presented in the Motion to Amend, itself, are not entitled to consideration.

2. Summary

For the foregoing reasons, we are not persuaded that 5th Market has met its burden of demonstrating that proposed substitute claims 50–72 are patentable over the prior art of record. Accordingly, we deny 5th Market’s Motion to Amend.

III. CONCLUSIONS

CME has demonstrated by a preponderance of the evidence that claims 1–23 and 41–49 of the ’419 patent are unpatentable based on the instituted grounds of unpatentability set forth in the table below.

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References	Basis	Claims Challenged
	§ 112 ¶ 2	1–23
CFTC and Lupien	§ 103(a)	1, 2, 4, 6–8, 11, 15, 16, 22, 23, and 41–49
CFTC, Lupien, and Wilson	§ 103(a)	3
CFTC, Lupien, and Grody	§ 103(a)	9, 10, 12, 14, and 18
CFTC, Lupien, and Dictionary	§ 103(a)	13 and 17
CFTC, Lupien, and Globex User Guide	§ 103(a)	19–21

CME has not demonstrated by a preponderance of the evidence that claim 5 is unpatentable under 35 U.S.C. § 103(a) over the combination of CFTC, Lupien, and Wilson. Nonetheless, because CME has demonstrated by a preponderance of the evidence that dependent claim 5 is indefinite under 35 U.S.C. 112 ¶ 2, dependent claim 5 is unpatentable.

IV. ORDER

In consideration of the foregoing, it is

ORDERED that CME has shown by a preponderance of the evidence that claims 1–23 and 41–49 of the '419 patent are unpatentable;

FURTHER ORDERED that 5th Market's Motion to Amend is DENIED; and

FURTHER ORDERED that, because this is a Final Written Decision, parties to this proceeding seeking judicial review of our decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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Paper 38
Entered: March 23, 2015

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CHICAGO MERCANTILE EXCHANGE, INC.,
Petitioner,

v.

5th MARKET, INC.,
Patent Owner.

Case CBM2013-00027
Patent 6,418,419 B1

Before JAMESON LEE, JONI Y. CHANG, and MICHAEL R. ZECHER,
Administrative Patent Judges.

ZECHER, *Administrative Patent Judge.*

DECISION

Granting-in-part Patent Owner's Request for Rehearing
37 C.F.R. § 42.71(d)

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I. INTRODUCTION

Patent Owner, 5th Market, Inc. (“5th Market”), timely filed a Request for Rehearing under 37 C.F.R. § 42.71(d) on January 15, 2015. Paper 34, “Req. Reh’g.” The Request for Rehearing seeks reconsideration of the Final Decision (Paper 33, “Dec.”) entered on December 17, 2014. In the Final Decision, we determined that claims 1–23 of U.S. Patent No. 6,418,419 B1 (“the ’419 patent”) are indefinite under 35 U.S.C. § 112 ¶ 2, and that claims 1–4, 6–23, and 41–49 of the ’419 patent are unpatentable under 35 U.S.C. § 103(a). Dec. 55–56. We also denied 5th Market’s Motion to Amend on the basis that 5th Market did not meet its burden of demonstrating that proposed, substitute claims 50–72 are patentable over the prior art of record. *Id.*

In its Request for Rehearing, 5th Market presents the following arguments: (1) our determination to deny 5th Market’s Motion to Amend as to proposed, substitute dependent claim 54 overlooks our determination that challenged dependent claim 5 is patentable over the prior art of record; (2) we overlooked 5th Market’s arguments directed to “simultaneously executing a trade of said items in the same and diverse markets as a single electronically matched trade,” as recited in independent claim 43; (3) we misapprehended that eliminating legging risk is a principle of operation of CFTC,¹ and modifying CFTC with the teachings of

¹ Memorandum from the Commodity Futures Trading Commission (“CFTC”) on the New York Mercantile Exchange’s (“NYMEX”) Proposal to Implement the NYMEX ACCESS Trading System (Dec. 7, 1992) (on file with the CFTC) (Ex. 1009, “CFTC”).

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Lupien² would create substantial legging risk where no such risk existed previously; and (4) we overlooked that Petitioner, Chicago Mercantile Exchange, Inc. (“CME”), exclusively relies on CFTC’s disclosure of spreads, and by extension options spreads, to teach the “order for a traded item being an option in a form of an algorithm with constraints thereon,” as recited in independent claim 41, and similarly recited in dependent claim 15. Req. Reh’g. 2–14.

After 5th Market filed its Request for Rehearing, we initiated a conference call with the parties to discuss our determination to deny 5th Market’s Motion to Amend (Paper 21, “Mot. to Amend”) as to proposed, substitute dependent claim 54. Paper 35. Proposed, substitute dependent claim 54 includes the same expressly recited limitations as challenged dependent claim 5, but it indirectly depends from proposed, substitute independent claim 50, which removes the “or compare” language from challenged independent claim 1 to cure an indefiniteness problem. See Mot. to Amend 3–4. We informed the parties that we were considering not applying to proposed, substitute claim 54 the requirement in *Idle Free Sys., Inc. v. Bergstrom, Inc.*, Case IPR2012-00027, (PTAB June 11, 2013) (Paper 26) (“the *Idle Free* decision”) that a patent owner must demonstrate patentability over the prior art, in general. Paper 35, 2. The reason is that dependent claim 5, for which claim 54 was proposed as a substitute, was challenged by CME on the basis of prior art, but not shown by CME to be unpatentable over the prior art, and proposed, substitute dependent claim 54 narrows the scope of challenged dependent claim 5 while curing the indefiniteness

² Lupien et al., U.S. Patent No. 5,101,353, issued Mar. 31, 1992 (Ex. 1010, “Lupien”).

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problem in challenged independent claim 1. *Id.* After hearing arguments from both parties, we authorized CME to file an Opposition to 5th Market's Request for Rehearing (Paper 36, "Opp. to Req. Reh'g.") that was tailored narrowly to address this issue. *Id.* at 3.

For the reasons discussed below, we grant 5th Market's request to modify the Final Decision, particularly our determination to deny 5th Market's Motion to Amend as to proposed, substitute dependent claim 54, but we decline to modify the Final Decision in any other respects.

II. STANDARD OF REVIEW

A request for rehearing must identify specifically all matters the party believes we misapprehended or overlooked, and the place where each matter was addressed previously in a motion, an opposition, or a reply. 37 C.F.R. § 42.71(d); *see also* 37 C.F.R. § 42.220(a) (stating that a patent owner response is filed as an opposition). With this in mind, we address the arguments presented by 5th Market in turn.

III. ANALYSIS

A. 5th Market's Motion to Amend as to Proposed, Substitute Dependent Claim 54

5th Market contends that its Motion to Amend was directed solely to the issue of indefiniteness under 35 U.S.C. § 112 ¶ 2—namely, the removal of the “or comparing” language recited in challenged independent claim 1. Req. Reh'g. 3. 5th Market argues that, when denying the Motion to Amend, we overlooked our

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initial determination that challenged dependent claim 5 is patentable over the prior art cited by CME in its Petition and, therefore, 5th Market was not required to demonstrate further in its Motion to Amend that proposed, substitute dependent claim 54 is patentable over the prior art of record or the prior art, in general. *See id.* (citing Dec. 45–46). 5th Market also argues that our reliance on the *Idle Free* decision is misplaced because that decision only is applicable in the context of an *inter partes* review proceeding, which does not permit grounds of unpatentability based on 35 U.S.C. § 112 ¶ 2. *Id.* at 3–4. Based on these arguments, 5th Market asserts that we should have granted its Motion to Amend as to proposed, substitute dependent claim 54. *See id.* at 5.

*1. The Idle Free Decision is Applicable to a Covered Business
Method Patent Review Proceeding*

As an initial matter, we are not persuaded by 5th Market’s argument that our reliance on the *Idle Free* decision is misplaced. Although the *Idle Free* decision originates from an *inter partes* review proceeding, it nonetheless is applicable to a covered business method patent review proceeding because the statutory provisions and regulations that govern a motion to amend are identical in both proceedings. *Compare* 35 U.S.C. § 316(d) *and* 37 C.F.R. § 42.121, *with* 35 U.S.C. § 326(d) *and* 37 C.F.R. § 42.221. Moreover, we are not persuaded by 5th Market’s assertion that a ground of unpatentability based on 35 U.S.C. § 112 ¶ 2 only is permissible in a covered business method patent review proceeding. Req. Reh’g 4. In at least one instance, a ground of unpatentability based on 35 U.S.C. § 112 ¶ 2 is permissible in an *inter partes* review proceeding. For example, in an opposition to a motion to amend filed in an *inter partes* review proceeding, a petitioner may

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present a ground of unpatentability based on 35 U.S.C. § 112 ¶ 2, because the statutory provision governing a final written decision in an *inter partes* review proceeding explains that the Board must determine the “patentability” of any new, amended claim. *See* 35 U.S.C. § 318(a) (stating that “the Patent Trial and Appeal Board shall issue a final written decision with respect to the *patentability* of . . . any new claim added under section 316(d)”) (emphasis added).

2. 5th Market Makes a Showing of Patentability Over the Prior Art, in General, for Proposed, Substitute Dependent Claim 54

5th Market’s argument that we overlooked our initial determination that challenged dependent claim 5 is patentable over the prior art cited by CME in its Petition and, therefore, 5th Market was not required to demonstrate further in its Motion to Amend that proposed, substitute dependent claim 54 is patentable over the prior art of record or the prior art, in general, raises an interesting issue. *See* Req. Reh’g 3. During the conference call discussed above, we framed the following issue for the parties: in a covered business method patent review proceeding, must the patent owner demonstrate patentability over the prior art, in general, for a proposed, substitute claim, where the challenged claim being substituted was not shown unpatentable over the prior art of record by the petitioner, and only narrows the challenged claim while curing an indefiniteness problem? Paper 35, 3. We provided CME with an opportunity to address this issue in an Opposition to 5th Market’s Request for Rehearing. *Id.*

In its Opposition to 5th Market’s Request for Rehearing, CME argues that we properly determined in the Final Decision that 5th Market’s Motion to Amend was deficient with respect to proposed, substitute dependent claim 54 because 5th

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Market did not distinguish this new claim over the prior art known to 5th Market. Opp. to Req. Reh’g. 2–3. CME’s argument, however, does not address the specific issue we framed above. CME essentially used its Opposition to 5th Market’s Request for Rehearing to re-argue arguments that it presented initially in its Opposition to 5th Market’s Motion to Amend (Paper 23, “Opp. to Amend”). *Compare* Opp. to Req. Reh’g. 2–3, *with* Opp. to Amend 10–12.

When we focus on the particular circumstances presented in this case, it helps clarify why we framed the issue identified above. In the Final Decision, we determined that CME did not meet its burden of demonstrating by a preponderance of the evidence that challenged dependent claim 5 would have been obvious over the prior art cited by CME in its Petition. Dec. 45–47. Although we determined that challenged dependent claim 5 was not unpatentable over the prior art asserted by CME in its Petition, we still held that challenged dependent claim 5 was unpatentable because CME met its burden of demonstrating by a preponderance of the evidence that this claim was indefinite under 35 U.S.C. 112 ¶ 2. *Id.* at 20–22. In its Motion to Amend, 5th Market moved to substitute claims 50–72 for challenged claims 1–23 only if we determined that challenged claims 1–23, which recited the claim phrase “means for comparing,” are indefinite under 35 U.S.C. § 112, ¶ 2. Mot. to Amend 1–2. We explained in the Final Decision that, except for the removal of the language “or compare,” proposed, substitute independent claim 50 was the same as challenged independent claim 1. Dec. 51–52 (citing Mot. to Amend 3–4). We also explained that, except for the change in their dependency, proposed, substitute claims 51–72 were the same as challenged dependent claims 2–23. *Id.* at 52 (citing Mot. to Amend 4–8).

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The requirement in the *Idle Free* decision for showing patentability over the prior art, in general, including accounting for the prior art known to the patent owner, and not just prior art cited by the petitioner, is based, at least in part, on the assumption that the original patent claim does not survive the challenge based on prior art asserted by the petitioner. Here, CME has not met its burden of demonstrating that challenged dependent claim 5 would have been obvious over the prior art cited in its Petition. 5th Market proposes substitute dependent claim 54 that only narrows the scope of challenged dependent claim 5 to overcome an indefiniteness problem. Under these particular circumstances, 5th Market does not need to do more to demonstrate patentability over the prior art, in general. Dependent claim 5 was examined by the United States Patent and Trademark Office (“Office”), and it further survived the unpatentability challenge by CME over prior art. This factual circumstance, without more, together with our determination that proposed, substitute dependent claim 54 only narrows the scope of challenged dependent claim 5 to cure an indefiniteness problem, is sufficient to satisfy 5th Market’s burden of demonstrating the patentability of proposed, substitute dependent claim 54 over prior art, especially given the absence of additional prior art cited and applied by CME when opposing 5th Market’s Motion to Amend.

*3. The Arguments Presented by CME in its Opposition to
5th Market’s Motion to Amend are not Persuasive*

CME presented a number of arguments in its Opposition to 5th Market’s Motion to Amend to support its assertion that we should not substitute claims 50–72 for challenged claims 1–23. CME’s arguments, however, do not address

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directly proposed, substitute dependent claim 54. In any event, for the sake of completeness, we will address these arguments in turn.

CME contends that one of the requirements in the *Idle Free* decision is that a patent owner may not broaden a challenged claim in any respect. Opp. to Amend 2–3. CME argues that 5th Market’s proposal to replace challenged independent claim 1 with proposed, substitute independent claim 50, which removes the language “or compare,” impermissibly broadens the scope of challenged independent claim 1. *Id.* at 2–3, 6. CME’s argument is predicated on the notion that “means for matching or comparing” recited in challenged independent claim 1 does not include two alternative means-plus-function limitations, but instead includes a single means-plus-function limitation directed to one structure that is capable of performing both functions of matching and comparing. *Id.* at 3–6.

CME does not explain sufficiently why the claim term “or” should be construed to mean “and” in the context of the claim. As we explained in the Final Decision, because the claim phrase “means for matching or comparing” includes alternative language, i.e., “or,” it includes two alternative means-plus-function limitations that should be addressed separately. Dec. 16–17. In fact, during the course of this proceeding, CME does not dispute that two separate algorithms are required to be disclosed in the Specification of the ’419 patent—one to perform the function of matching and one to perform the function of comparing. *See* Paper 24, 14–15. Taking two alternative means-plus-function limitations and removing one alternative—in this case, “means for comparing”—effectively narrows the scope of challenged independent claim 1. In other words, we agree with 5th Market that removing one of two alternatives, leaving only one possibility, does not enlarge the

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scope of a claim. Mot. to Amend 8. Therefore, contrary to CME's assertion, 5th Market satisfies the requirement in the *Idle Free* decision that a patent owner may not broaden a challenged claim in any respect because proposed, substitute independent claim 50 removes one of two alternative means-plus-function limitations, thereby narrowing the scope of challenged independent claim 1.

Next, CME contends that, based on the Board's guidance in *Nichia Corp. v. Emcore Corp.*, Case IPR2012-00005 (PTAB June 3, 2013) (Paper 27), a motion to amend must show sufficient written description support in the original disclosure for each new claim. Opp. to Amend 7–8. CME argues that there is insufficient written description support for the “means for matching” limitation recited in proposed, substitute independent claim 50 in the disclosure of the application that led to the '419 patent because independent claims 1 and 41, as originally filed, include a means-plus-function limitation that performs a different function. *Id.* at 8–10.

Proposed, substitute independent claim 50 recites, in relevant part, “means for matching . . . algorithmic buy/sell orders with algorithmic or non-algorithmic sell/buy orders.” Mot. to Amend 4. Upon reviewing the disclosure of the application that led to the '419 patent, independent claims 1 and 41, as originally filed, both include the language “means for matching . . . algorithmic buy/sell orders with non-algorithmic sell/buy orders.” Ex. 1022, 27:24–27, 33:1–3.³ In general, “original claims constitute their own description.” *In re Koller*, 613 F.2d

³ The page numbers referred to in the disclosure of the application that led to the '419 patent are the original page numbers located in the bottom, left-hand corner of each page.

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819 (CCPA 1980); *In re Gardner*, 480 F.2d 879, 880 (CCPA 1973) (“It was equally a ‘written description’ whether located among the original claims or in the descriptive part of the specification.”). We are satisfied that, as of the filing date of the ’419 patent, the function performed by the “means for matching” limitation recited in independent claims 1 and 41, as originally filed, reasonably conveys to one of ordinary skill in the art that the inventors of the ’419 patent possessed substantially the same function performed by the “means for matching” limitation recited in proposed, substitute independent claim 50.

Lastly, CME contends that 5th Market’s Motion to Amend fails to show that the proposed, substitute claims 50–72 are patentable over the prior art, in general. Opp. to Amend 10–12. CME’s argument in this regard focuses solely on proposed, substitute independent claim 50. CME does not present separate unpatentability arguments against proposed, substitute dependent claim 54. In any event, as we explained above, dependent claim 5 was examined by the Office, and it further survived the unpatentability challenge by CME over prior art. That circumstance, without more, together with our determination that proposed, substitute dependent claim 54 only narrows the scope of challenged dependent claim 5 to cure an indefiniteness problem, is sufficient to satisfy 5th Market’s burden of demonstrating patentability of proposed, substitute dependent claim 54 over prior art, especially given the absence of additional prior art cited and applied by CME when opposing 5th Market’s Motion to Amend.

4. Summary

Based on the particular circumstance presented in this case, 5th Market has shown by a preponderance of the evidence that proposed, substitute dependent

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claim 54 is patentable over the prior art. We, therefore, vacate the portion of our Final Decision denying 5th Market's Motion to Amend as to proposed, substitute dependent claim 54, and modify the Final Decision to include our analysis set forth above. Proposed, substitute dependent claim 54 is permitted only if it is rewritten in independent form, including all of the limitations of its underlying base claim and any intervening claims. In a Claim Appendix attached to this Decision, we have rewritten proposed, substitute dependent claim 54 in independent form, including all the limitations of proposed, substitute independent claim 50 and proposed, substitute dependent claim 51.

B. We did not Overlook Whether the Cited Prior Art Teaches a Particular Claim Limitation, Especially one that was Presented in the form of a Separate Patentability Argument in the Patent Owner Response

5th Market contends that, when determining that the prior art of record renders the challenged claims of the '419 patent unpatentable under 35 U.S.C. § 103(a), we overlooked a particular claim limitation that was argued separately in its Patent Owner Response. Req. Reh'g. 5. In particular, 5th Market argues that CFTC and Lupien, either alone or in combination, do not teach "simultaneously executing a trade of said items in the same and diverse markets as a single electronically matched trade," as recited in independent claim 43. *Id.* at 6–9. 5th Market asserts that it presented essentially the same argument in its Patent Owner Response. *Id.* at 5 (citing PO Resp. 12, 15, 25–26, 34, 36, 53–57).

5th Market cites to disparate portions of the Patent Owner Response that are not tied together to present a separate patentability argument regarding the disputed limitation. *See, e.g.*, PO Resp. 12, 15, 25–26, 34, 36, 53–57. These disparate

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portions of the Patent Owner Response do not present substantive analysis that explains why the collective teachings of CFTC and Lupien relied upon by CME in its Petition do not teach the disputed limitation. To the extent that they discuss the purported “backfill” testimony of CME’s expert witness, Dr. Craig Pirrong, during cross-examination, as we explained in the Final Decision, the portions of Dr. Pirrong’s cross-examination testimony cited by 5th Market in the Patent Owner Response do not “backfill” the evidence presented by CME in its Petition, or otherwise render Dr. Pirrong’s supporting testimony provided in the accompanying Declaration less persuasive. *See* Dec. 43–44.

In addition, 5th Market’s Request for Rehearing directs us to new portions of the record that were not presented or developed in its Patent Owner Response. *Compare* PO Resp. 12, 15, 25–26, 34, 36, 53–57 (citing Ex. 1009, 7, 29, 34;⁴ Ex. 1010, 1:20–22, 1:35–42, 2:49–54, 2:60–3:3, 4:35–36, 6:53, 10:24–38, 11:51–62; Ex. 2008 (Declaration of Dr. Terry Rickard) ¶¶ 25, 58, 77–82; Ex. 2007, 177–81), *with* Req. Reh’g. 6–9 (citing Ex. 1010, 11:49–12:5, Fig. 7; Paper 32 (Oral Hearing Transcript), 51:18–52:3). A request for rehearing is not an opportunity to present and develop new arguments or evidence. Put simply, we could not have overlooked or misapprehended arguments or evidence not presented and developed by 5th Market in the first instance in the Patent Owner Response.

⁴ The page numbers referred to in CFTC are the original page numbers located in the top, middle of each page.

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C. Mere Disagreement with our Analysis and Conclusion is not a Proper Basis on which to Request a Rehearing

5th Market contends that we misapprehended the arguments presented in its Patent Owner Response that eliminating legging risk is a principle of operation of CFTC, and modifying CFTC with the teachings of Lupien would create substantial legging risk where no such risk existed previously. Req. Reh’g 9 (citing PO Resp. 25–26, 31, 68–69). 5th Market argues that, although we recognized certain aspects of these arguments in the Final Decision, our analysis and conclusion misapprehends the teachings of CFTC, the supporting testimony of its expert witness, Dr. Rickard, and the purported “backfill” testimony of CME’s expert witness, Dr. Pirrong, during cross-examination. *Id.* at 10–12.

In the Final Decision, we considered these arguments presented in 5th Market’s Patent Owner Response, but we were not persuaded. *See* Dec. 37–39. 5th Market’s arguments in this regard amount to a mere disagreement with our analysis and conclusion. Disagreement with our analysis and conclusion is not a proper basis on which to request rehearing.

In any event, we note that these arguments presented by 5th Market are based, at least in part, on the purported “backfill” testimony of CME’s expert witness, Dr. Pirrong, during cross-examination and, according to 5th Market, his new approaches for adding Lupien’s external price feed to CFTC’s NYMEX American Computerized Commodity Exchange System and Services (“NYMEX ACCESS”). *See* Req. Reh’g 10–12. As we explained in the Final Decision, the portions of Dr. Pirrong’s cross-examination testimony relied upon by 5th Market do not “backfill” the rationale to combine the teachings of CFTC and Lupien set

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forth by CME in the Petition, or otherwise undermine that rationale. *See* Dec. 41–42.

*D. 5th Market Mischaracterizes the Disclosures in CFTC
Relied Upon by CME in its Petition*

5th Market contends that we overlooked CME’s exclusive reliance upon CFTC’s spreads, and by extension option spreads, to teach the “order for a traded item being an option in a form of an algorithm with constraints thereon,” as recited in independent claim 41, and similarly recited in dependent claim 15. Req. Reh’g. 12–13. 5th Market argues that, despite the possibility that other types of algorithmic orders involving options may fall within the purview of this disputed limitation, the only algorithmic order involving an option that CME discloses is an option spread. *Id.* at 13. 5th Market asserts that, because CFTC’s NYMEX ACCESS system does not support trading option spreads at a differential, we erroneously determined that CME presented sufficient evidence to support a finding that CFTC teaches this disputed limitation. *Id.* at 13–14 (citing Ex. 1009, 34).

We are not persuaded by 5th Market’s arguments because they mischaracterize the disclosures in CFTC relied upon by CME in its Petition to teach the disputed limitation. As we explained in the Final Decision, the disputed limitation should not be construed so that it only encompasses option spreads. *See* Dec. 31–32. Instead, the broadest reasonable interpretation of the disputed limitation encompasses algorithmic orders involving options, one example being an option spread. *See id.*

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As we noted in the Final Decision, CME contends that orders entered into CFTC's NYMEX ACCESS system are in the form of an algorithm with constraints, such as quantity, limit prices, strike price and put or call, and any other precondition for entry into the system. Dec. 32 (citing Pet. 60–61). Therefore, contrary to 5th Market's assertion, CME does not rely exclusively on CFTC's disclosure of spreads, and by extension option spreads, to teach the disputed limitation. Rather, we agree with CME that CFTC's disclosure of entering orders into the NYMEX ACCESS system in the form of an algorithm with constraints that are specific to options, such as put or call, amounts to entering algorithmic orders involving options. We, therefore, maintain our initial determination that CME presents sufficient evidence to support a finding that CFTC teaches the "order for a traded item being an option in a form of an algorithm with constraints thereon," as recited in independent claim 41, and similarly recited in dependent claim 15. Dec. 32.

IV. CONCLUSION

For the foregoing reasons, 5th Market has demonstrated that we misapprehended or overlooked the particular circumstances surrounding our initial determination to deny 5th Market's Motion to Amend as to proposed, substitute dependent claim 54. We, therefore, modify the Final Decision to grant 5th Market's Motion to Amend only as to proposed, substitute dependent claim 54. We maintain our initial determination to deny 5th Market's Motion to Amend as to proposed, substitute dependent claims 50–53 and 55–72. 5th Market, however, has not demonstrated that we misapprehended or overlooked any matter in determining

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that claims 1–23 of the '419 patent are indefinite under 35 U.S.C. § 112 ¶ 2, and claims 1–4, 6–23, and 41–49 of the '419 patent are unpatentable under 35 U.S.C. § 103(a).

V. ORDER

Accordingly, it is:

ORDERED that 5th Market's Request for Rehearing is GRANTED-IN-PART;

FURTHER ORDERED that the portion of the Final Decision denying 5th Market's Motion to Amend as to proposed, substitute dependent claim 54 is vacated;

FURTHER ORDERED that the Final Decision is modified to include our analysis regarding proposed, substitute dependent claim 54 (*see supra* Section III(A)(1–4);

FURTHER ORDERED that proposed, substitute dependent claim 54 is authorized as rewritten in independent form as shown in the Claim Appendix attached to this Decision; and

FURTHER ORDERED that 5th Market's Request for Rehearing is DENIED in all other respects.

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CLAIM APPENDIX

54. A conditional order transaction network that matches or compares buy and sell orders for a plurality of security instruments based upon conditions set forth within the order, including price represented as an algorithm with constraints thereon, the transaction network comprising:

a variable number of trader terminals for entering an order for a security instrument in a form of an algorithm with constraints thereon that represent a willingness to transact, where price of one security is a dependent variable of the algorithm within the constraints and dynamically changing price of another security is an independent variable thereof, the price as the dependent variable being continuously changeable responsive to changes in price of the independent variable, the algorithm representing a buy or sell order; and

at least one controller computer coupled to each of the variable number of trader terminals over a communications network and receiving as inputs,

a) each algorithm with its corresponding constraints, and

b) at least one external price feed depicting prices of various securities and contracts from external multiple exchanges which may be used as an independent variable of the algorithm or an input to a constraint variable, the controller computer comprising,

means for matching, in accordance with the constraints and the conditions, algorithmic buy orders with algorithmic sell orders, one of the conditions being a requirement that two or more securities are tradable contemporaneously as a contingent trade of those respective securities, and

means for matching, in accordance with the constraints and the conditions, algorithmic buy/sell orders with algorithmic or non-algorithmic sell/buy orders through use of the external multiple data sources;

wherein the price, as represented in the form of the algorithm, includes an order quantity subject to another algorithm; and

wherein the price is a yield spread.

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Paper 9
Entered: December 18, 2013

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CHICAGO MERCANTILE EXCHANGE, INC.
Petitioner

v.

5th MARKET, INC.
Patent Owner

Case CBM2013-00027
Patent 6,418,419

Before JAMESON LEE, JONI Y. CHANG, and MICHAEL R. ZECHER,
Administrative Patent Judges.

ZECHER, *Administrative Patent Judge.*

DECISION
Institution of Covered Business Method Patent Review
37 C.F.R. § 42.208

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Patent 6,418,419

I. INTRODUCTION

Petitioner, Chicago Mercantile Exchange, Inc., filed a petition (“Pet.”) requesting a review under the transitional program for covered business method patents of U.S. Patent No. 6,418,419 (“the ’419 patent”). Paper 3. Patent Owner, 5th Market, Inc., filed a preliminary response (“Prelim. Resp.”). Paper 6. We have jurisdiction under 35 U.S.C. § 324.¹

The standard for instituting a covered business method patent review is set forth in 35 U.S.C. § 324(a), which provides:

THRESHOLD—The Director may not authorize a post-grant review to be instituted unless the Director determines that the information presented in the petition filed under section 321, if such information is not rebutted, would demonstrate that it is more likely than not that at least 1 of the claims challenged in the petition is unpatentable.

Petitioner challenges the patentability of claims 1-23 and 41-49 of the ’419 patent under 35 U.S.C. §§ 101, 112 ¶ 2, and 103(a). Taking into account Patent Owner’s preliminary response, we determine that the information presented in the petition establishes that the challenged claims are more likely than not unpatentable. Pursuant to 35 U.S.C. § 324 and

¹ See § 18(a) of the Leahy-Smith America Invents Act, Pub. L. 112-29, 125 Stat. 284, 329 (2011) (“AIA”). § 18(a)(1) of the AIA provides that the transitional program for covered business method patents will be regarded as a post-grant review under chapter 32 of title 35 United States Code and will employ the standards and procedures as a post-grant review, subject to certain exceptions.

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§ 18(a) of the AIA, we hereby institute a covered business method patent review as to claims 1-23 and 41-49 of the '419 patent.

A. Petitioner's Standing

Section 18 of the AIA governs the transitional program for covered business method patent reviews. Section 18(a)(1)(B) of the AIA limits such reviews to persons, or their privies, that have been sued or charged with infringement of a covered business method patent.

Petitioner asserts that it has been sued for infringement of the '419 patent, as well as U.S. Patent No. 7,024,387, in *Fifth Market, Inc. v. CME Group Inc. et al.*, Civil Action No. 08-0520 GMS, which was filed in the United States District Court for the District of Delaware. Pet. 6 (n. 2, citing Ex. 1004).

B. The '419 patent (Ex. 1001)

The '419 patent generally relates to the conditional trading of securities, such as convertible bond “swaps,” risk arbitrage, and combinations thereof in both listed and over-the-counter markets, via one or more electronic networks. Ex. 1001, 1:7-13. According to the '419 patent, there is no computer network that links participants involved in convertible securities in a transaction-oriented format. Ex. 1001, 1:32-33. Virtually every transaction is through verbal private negotiations, i.e., almost every bid, offer, or trade is made verbally and is transmitted only to the participants involved. Ex. 1001, 1:33-36. The '419 patent allegedly describes a way to solve that problem by creating an anonymous auction market, instead of a negotiated market, that displays prices to all participants

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and saves the trade information for later use. Ex. 1001, 1:36-41.

Figure 1 of the '419 patent illustrates a conditional order transaction system (Ex. 1001, 4:39-41), and is reproduced below:

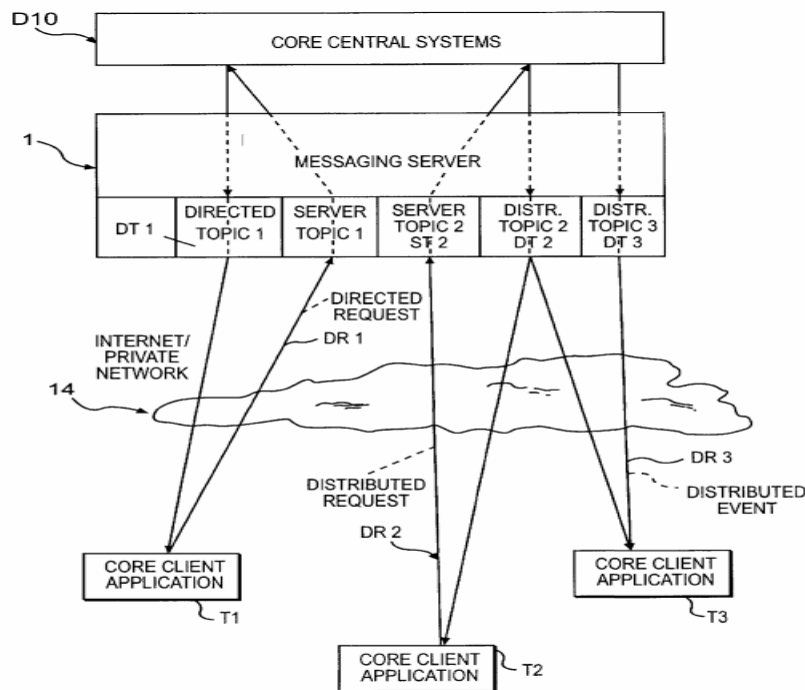


FIG. 1

As shown in Figure 1 of the '419 patent, there are three scenarios which use a conditional order routing exchange ("CORE"). Ex. 1001, 5:16-18. The first scenario includes CORE client program T1, which formats and transmits a client/subscriber/trade request with a directed response; the second scenario includes CORE client program T1, which formats and transmits a client request whose response is disseminated to various interested parties; and the third scenario involves CORE client program T2, which receives data that originates outside the system and, subsequently, redistributes it to all interested parties. Ex. 1001, 5:18-61.

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Figure 3 of the '419 patent illustrates the processing of a match order using the system of Figure 1 (Ex. 1001, 4:45-46; 6:41-42), and is reproduced below:

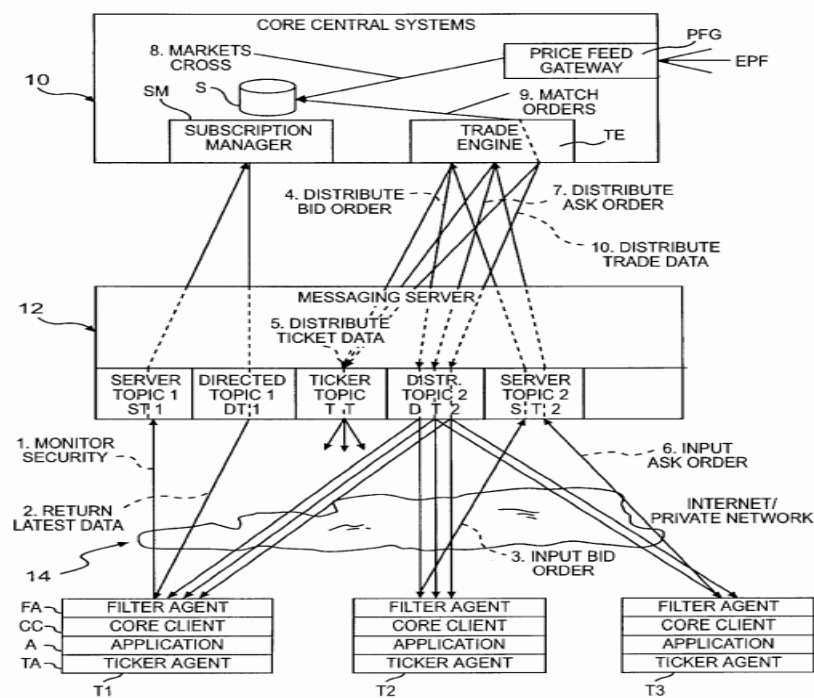


FIG. 3

As shown in Figure 3 of the '419 patent, one client requests to be informed about events relating to a given security; a second client places a bid for that security; and a third client places an ask for that same security. Ex. 1001, 6:42-46. The processing steps illustrated in Figure 3 of the '419 patent are as follows: (1) Monitor Security; (2) Return Latest Data; (3) Input Bid Order; (4) Distribute Bid Order; (5) Distribute Ticker Data; (6) Input Ask Order; (7) Distribute Ask Order (also Distribute Ticker Data); (8) External Prices Converge Making Orders Cross; (9) Match Crossed Orders; and (10) Distribute Trade Details. Ex. 1001, 6:47-62.

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C. Illustrative Claims

Claims 1, 41, and 43 are independent claims. Claims 2-23, 44, and 45 directly, or indirectly, depend from independent claim 1; claims 42, 46, and 47 directly depend from independent claim 41; and claims 48 and 49 directly depend from independent claim 43. Independent claims 1 and 41 are illustrative of the '419 patent and are reproduced below:

1. A conditional order transaction network that matches or compares buy and sell orders for a plurality of security instruments based upon conditions set forth within the order, including price represented as an algorithm with constraints thereon, the transaction network comprising:
 - a variable number of trader terminals for entering an order for a security instrument in a form of an algorithm with constraints thereon that represent a willingness to transact, where price of one security is a dependent variable of the algorithm within the constraints and dynamically changing price of another security is an independent variable thereof, the price as the dependent variable being continuously changeable responsive to changes in price of the independent variable, the algorithm representing a buy or sell order; and
 - at least one controller computer coupled to each of the variable number of trader terminals over a communications network and receiving inputs,
 - a) each algorithm with its corresponding constraints, and
 - b) at least one external price feed depicting prices of various securities and contracts from external multiple exchanges which may be used as an independent variable of the algorithm or an input to a constraint variable, the controller computer comprising,
 - means for matching, in accordance with the constraints and the conditions, algorithmic buy orders with algorithmic sell orders, one of the conditions being a requirement that two or

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more securities are tradable contemporaneously as a contingent trade of those respective securities, and

means for matching or comparing, in accordance with the constraints and the conditions, algorithmic buy/sell orders with algorithmic or non-algorithmic sell/buy orders through use of the external multiple data sources.

Ex. 2001, 1:26-61 (brackets and italics omitted).

41. A conditional order transaction network that matches buy and sell orders for a plurality of items based upon conditions set forth within an order for an item, including price represented as an algorithm with constraints thereon, the conditional order transaction network comprising:

a variable number of trader terminals for entering the order for a traded item being an option in a form of an algorithm with constraints thereon that represent a willingness to transact, where price of the traded item is a dependent variable of the algorithm within the constraints and dynamically changing price of another item is an independent variable thereof, the price of the traded item as the dependent variable being continuously changeable responsive to changes in price of the another item as the independent variable, the algorithm representing a buy or sell order for said traded item;

controller computer means coupled to each of the variable number of trader terminals over a communications network and receiving as inputs each algorithm with its corresponding constraints, and at least one external price feed depicting at least one price of at least one item from at least one external network which is used as either the independent variable of the algorithm or an input to a constraint variable; and

means for matching, in accordance with the constraints and the conditions, through use of the at least one external price feed from the at least one external network, at least one of algorithmic or non-algorithmic buy orders with algorithmic sell

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orders, and non-algorithmic buy orders with algorithmic sell orders, one of the conditions being a requirement that two or more securities are tradable contemporaneously as a contingent trade of those respective securities responsive to changes in price of another item as the independent variable.

Ex. 2001, 3:1-37 (brackets and italics omitted).

D. Covered Business Method Patent

1. Financial Product or Service

Under section 18(a)(1)(E) of the AIA, the Board may institute a transitional proceeding only for a patent that is a covered business method patent. A “covered business method patent” is a patent that “claims a method or corresponding apparatus for performing data processing or other operations used in the practice, administration, or management of a financial product or service, except that the term does not include patents for technological inventions.” AIA § 18(d)(1); *see* 37 C.F.R. § 42.301(a). For purposes of determining whether a patent is eligible for a covered business method patent review, the focus is on the claims. *See* Transitional Program for Covered Business Method Patents—Definitions of Covered Business Method Patent and Technological Invention; Final Rule, 77 Fed. Reg. 48734, 48736 (Aug. 14, 2012). A patent need have only one claim directed to a covered business method to be eligible for review. *Id.*

Patent Owner does not dispute Petitioner’s contention that, because independent claim 1 of the ’419 patent recites an order transaction network that “matches or compares buy or sell orders for a plurality of security instruments,” the ’419 patent is directed to the administration or

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management of a financial product or service and, therefore, is a covered business method patent eligible for review. Pet. 4-5. We agree with Petitioner that independent claim 1 satisfies the “financial product or service” component of the definition set forth in section 18(d)(1) of the AIA.

2. Technological Invention

The definition of a “covered business method patent” in section 18(d)(1) of the AIA does not include patents for “technological inventions.” When determining whether a patent is for a technological invention, we consider “whether the claimed subject matter as a whole recites a technological feature that is novel and unobvious over the prior art; and solves a technical problem using a technical solution.” 37 C.F.R. § 42.301(b).

Petitioner contends that even if the claim recitations of “a variable number of trader terminals,” “a plurality of trader workstations,” and “at least one controller computer” could be characterized as technical, the claims of the ’419 patent do not provide a technical solution to a technical problem. Pet. 5. In response, Patent Owner contends that the claims of the ’419 patent, as a whole, solve a technical problem using a technical solution. *Id.* at 9-12. For instance, Patent Owner alleges that the conditional order transaction network of claim 1 provides “a technical solution to a technical problem[,],i.e., the inability to monitor and effectively match multiple changeable contingent algorithmic/algorithmic or algorithmic/non-algorithmic trades while receiving external data input as an independent variable or constraint variable for algorithm(s).” *Id.* at 11.

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As discussed above, the invention in the '419 patent addresses the problem associated with electronic trading platforms that there is no computer network that links participants involved in convertible securities in a transaction-oriented format. Ex. 1001, 1:32-33. According to Patent Owner, the '419 patent allegedly solves that problem by providing “a conditional order transaction network linking the input of external data with the contemporaneous matching of two interdependent algorithmic or non-algorithmic orders.” Prelim. Resp. 11. However, a conditional order transaction network that interfaces with at least one external data source solves a financial problem rather than a technical problem, i.e., it allows traders to transact conditional buy and sell orders for securities that satisfies the dynamically changing conditions and constraints of those securities in multiple markets. Patent Owner does not assert that, at the time of the invention in the '419 patent, electronic trading platforms, nor computer networks, were unknown, unachievable, or incapable of being combined in the manner claimed. Therefore, we conclude that the claims of the '419 patent do not solve a technical problem using a technical solution.

We also have considered whether the claimed subject matter of the '419 patent, as a whole, recites a technological feature that is novel and unobvious over the prior art (Pet. 5-6; Prelim. Resp. 12-13), but, because we conclude that the claims of the '419 patent do not solve a technical problem using a technical solution, the '419 patent is a “covered business method patent” eligible for a covered business method patent review.

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E. Prior Art Relied Upon

Petitioner relies upon the following prior art references:

Lupien US 5,101,353 Mar. 31, 1992 (Ex. 1010)

Russ M. Miller, *The Design of Decentralized Auction Mechanisms that Coordinate Continuous Trade in Synthetic Securities*, J. ECON. DYNAMICS & CONTROL 237, 237-53 (1990) (Ex. 1007) (“Miller”).

Memorandum from the Commodity Futures Trading Commission on the New York Mercantile Exchange’s (“NYMEX”) Proposal to Implement the NYMEX ACCESS Trading System (Dec. 7, 1992) (on file with the CFTC) (Ex. 1009) (“CFTC”).

RICHARD S. WILSON & FRANK J. FABOZZI, CORPORATE BONDS STRUCTURES & ANALYSIS (1996) (Ex. 1011) (“Wilson”).

Allan D. Grody et al., Global Electronic Markets A Preliminary Report of Findings (Center for Digital Economy Research, Working Paper No. STERN IS-95-18, 1994) (Ex. 1012) (“Grody”)

DICTIONARY OF FINANCE & INVESTMENT TERMS (4th ed. 1995) (Ex. 1013) (“Dictionary”).

Globex User Guide, REUTERS Ltd. (1996) (Ex. 1014) (“Globex User Guide”).

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F. Alleged Grounds of Unpatentability

Petitioner challenges claims 1-23 and 41-49 of the '419 patent based on the alleged grounds of unpatentability set forth in the table below:

References	Basis	Challenged Claims
	§ 112, ¶ 2	1-23 and 41-49
	§ 101	1-23 and 41-49
CFTC and Miller	§ 103(a)	1, 2, 4, 6-8, 11, 15, 16, 22, 23, and 41-49
CFTC and Lupien	§ 103(a)	1, 2, 4, 6-8, 11, 15, 16, 22, 23, and 41-49
CFTC, Miller, and Wilson	§ 103(a)	3 and 5
CFTC, Lupien, and Wilson	§ 103(a)	3 and 5
CFTC, Miller, and Grody	§ 103(a)	9, 10, 12, 14, and 18
CFTC, Lupien, and Grody	§ 103(a)	9, 10, 12, 14, and 18
CFTC, Miller, and Dictionary	§ 103(a)	13 and 17
CFTC, Lupien, and Dictionary	§ 103(a)	13 and 17
CFTC, Miller, and Globex User Guide	§ 103(a)	19-21
CFTC, Lupien, and Globex User Guide	§ 103(a)	19-21
CFTC and Grody	§ 103(a)	1, 2, 4, 6-12, 14-16, 18, 22, 23, 41, 42, and 44-47

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II. ANALYSIS

A. *Claim Construction*

As a first step in our analysis for determining whether to institute a covered business method patent review, we determine the meaning of the claims. In a covered business method patent review, a claim in an unexpired patent shall be given its broadest reasonable construction in light of the specification of the patent in which it appears. 37 C.F.R. § 42.300(b). The parties propose claim constructions for a number of claim terms or phrases recited in the '416 patent. Pet. 8-15; Prelim. Resp. 13-19. We will discuss each claim term or phrase in turn.

1. *“Means for matching” (claims 1, 41, and 43)*

At the outset, Petitioner contends that the specification of the '419 patent discloses that a computer performs the matching function. Pet. 9 (citing Ex. 1001, 7:22-24). Petitioner argues that, because “means for matching” is nothing more than a general purpose computer, independent claims 1, 41, and 43, and the claims that depend therefrom, are indefinite under 35 U.S.C. § 112, ¶ 2. *Id.* Nonetheless, for purposes of this proceeding only, Petitioner asserts that “means for matching” should be construed as hardware, software, or a combination of both. *Id.* at 9-10 (citing Ex. 1001, 7:22-24; Ex. 1005 ¶ 62). In response, Patent Owner contends that “means for matching” is more than a general purpose computer. Prelim. Resp. 14-15. Patent Owner argues that “means for matching” should be construed as a special purpose computer programmed to perform the processing steps illustrated in Figure 3 of the '419 patent. *Id.* (citing Ex. 1001, 6:41-42, 50-

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61; 6:62-7:47).

When construing a means-plus-function limitation under 35 U.S.C. § 112 ¶ 6,² we first must identify the claimed function, and then we look to the specification to identify the corresponding structure that actually performs the claimed function. *Med. Instrumentation & Diagnostics Corp. v. Elekta AB*, 344 F.3d 1205, 1210 (Fed. Cir. 2003); *Cardiac Pacemakers, Inc. v. St. Jude Med., Inc.*, 296 F.3d 1106, 1119 (Fed. Cir. 2002). The corresponding structure of a means-plus-function limitation, however, must be more than simply a general-purpose computer or microprocessor to avoid impermissible functional claiming. *Aristocrat Techs. Austl. Pty Ltd. v. Int'l Game Tech.*, 521 F.3d 1328, 1333 (Fed. Cir. 2008). That is, the specification must disclose “enough of an algorithm to provide the necessary structure under § 112 ¶ 6” or a disclosure that can be expressed in any understandable terms, e.g., a mathematical formula, in prose, or as a flowchart. *Finisar Corp. v. The DirectTV Group*, 523 F.3d 1323, 1340 (Fed. Cir. 2008).

As an initial matter, “means for matching” is a means-plus-function limitation because: (1) it uses the term “means for”; (2) the term “means for” is modified by functional language—namely “matching”; and (3) the term “means for” is not modified by sufficient structure recited in the claim

² Section 4(c) of the AIA re-designated 35 U.S.C. § 112 ¶ 6, as 35 U.S.C. § 112(f). Because the '791 patent has a filing date before September 16, 2012 (effective date), we will refer to the pre-AIA version of 35 U.S.C. § 112.

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to perform the recited function of “matching.” Next, we must identify the corresponding structure that performs the recited function of “matching.” As discussed above, Figure 3 of the ’419 patent illustrates the processing of a match order using the system of Figure 1. Ex. 1001, 4:45-46; 6:41-42. The disclosed system is tantamount to a general purpose computer. The specification of the ’419 patent further discloses that the aforementioned processing steps include: (1) Monitor Security; (2) Return Latest Data; (3) Input Bid Order; (4) Distribute Bid Order; (5) Distribute Ticker Data; (6) Input Ask Order; (7) Distribute Ask Order (also Distribute Ticker Data); (8) External Prices Converge Making Orders Cross; (9) Match Crossed Orders; and (10) Distribute Trade Detail. Ex. 1001, 6:47-62. For purposes of this decision, we identify the corresponding structure for performing the recited function of “matching” to be a computer programmed to perform the ten processing steps illustrated in Figure 3 of the ’419 patent. *See Finisar*, 523 F.3d at 1340.

2. “Means for matching or comparing” (claim 1)

Petitioner reiterates its position that the specification of the ’419 patent fails to disclose a structure—particularly a special purpose computer—that corresponds to the “matching” function. Pet. 10. Petitioner also contends that the specification of the ’419 patent fails to disclose a structure that corresponds to the “comparing” function. *Id.* As a consequence, Petitioner argues that independent claim 1, and the claims that depend therefrom, are indefinite under 35 U.S.C. § 112 ¶ 2. *Id.* Nonetheless, for purposes of this proceeding, Petitioner asserts that “means

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for matching or comparing” should be construed as hardware, software, or a combination of both. *Id.* at 10-11 (citing Ex. 1001, 7:22-24; Ex. 1005 ¶ 67). In response, Patent Owner contends the specification of the ’419 patent provides several disclosures, including diagrams, that explain the recited function of “comparing.” Prelim. Resp. 15-16 (citing Ex. 1001, 13:44-14:45; 15:11-19; figs. 3 and 4). Based on the cited disclosures and diagrams, Patent Owner argues that “means for matching and comparing should be construed as a computer that matches and compares trade data. *Id.* at 16.

Given that “means for matching or comparing” includes alternative language, i.e., “or,” we will address “means for matching” and “means for comparing” separately. With respect to “means for matching,” we already identified the corresponding structure for performing the recited function of “matching”—namely a computer programmed by the algorithm represented by the ten processing steps illustrated in Figure 3 of the ’419 patent.

We respect to “means for comparing,” this claim phrase is a means-plus-function limitation because: (1) it uses the term “means for”; (2) the term “means for” is modified by functional language—namely “comparing”; and (3) the term “means for” is not modified by sufficient structure recited in the claim to perform the recited function of “comparing.” Next, we must identify the corresponding structure that performs the recited function of “comparing.” Patent Owner relies upon two disclosures in the specification of the ’419 patent to support its claim construction. According to Patent Owner, the specification of the ’419 patent states that “trading terminals are

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set up to reflect each trader's preferred view of the continuously changing market parameters, and to sort (which necessarily requires comparing) the same." Prelim. Resp. 15 (citing Ex. 1001, 13:44-14:45). However, the cited portion of the specification of the '419 patent only discloses that trading terminals display three fields of information, and the color-coding schema associated therewith, on Market Monitor Screen 112. Although a trading terminal is tantamount to a general purpose computer, there is no explicit disclosure regarding sorting or comparing trading parameters.

The other portion of specification of the '419 patent relied upon by Patent Owner is reproduced below:

In the preferred embodiment of the present invention, the system sorts and displays the orders on a continuous basis, i.e., when a new order is entered, it is sorted by the client in the order of "best" price given; an underlying security price input, then, as the underlying securing price input changes, (this is at least one, and the independent variable in our order's algorithm) the prices of each order (dependent variable) are recalculated and re-sorted.

Ex. 1001, 15:11-19. The cited portion of the specification of the '419 patent, at best, indicates that the system sorts or compares orders based on the "best" price given. However, although the system is tantamount to a general purpose computer, the purported single step of comparing orders based on the "best" prices given does not amount to a specific algorithm that transforms an otherwise general purpose computer into a special purpose computer programmed to perform the recited function of "comparing." See *Finisar*, 523 F.3d at 1340; *Blackboard, Inc. v. Desire2Learn, Inc.*, 574

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F.3d 1371, 1384 (Fed. Cir. 2009) (language that simply describes the function to be performed describes an outcome, not a means for achieving that outcome); *see also Encyclopaedia Britannica, Inc. v. Alphine Elecs., Inc.*, 355 Fed. Appx. 389, 394-95, 2009 WL 4458527 (Fed. Cir. 2009) (unpublished), at * 5 (stating that a “proposed one-step algorithm amounts to pure functional claiming which does not comply with the disclosure requirement of § 112 ¶ 6.”).

We identify the corresponding structure for performing the recited function of “comparing” as nothing more than a general purpose computer. For purposes of this decision, because the specification of the ’419 patent fails to disclose sufficient structure for performing the recited function of “comparing,” we construe “means for . . . comparing” as simply a computer programmed to compare data.

3. *“A comparator for comparing all incoming orders relative to outgoing orders” (claims 23 and 42)*

Petitioner contends that the claim term “comparator” invokes 35 U.S.C. § 112 ¶ 6 because it is a nonce word, or verbal construct, that is not recognized as the name of a structure, but rather a substitute for “means for.” Pet. 11. Petitioner then argues that the corresponding structure for performing the recited function of “comparing all incoming orders relative to outgoing orders” is nothing more than a general purpose computer and, therefore, claims 23 and 42 are indefinite under 35 U.S.C. § 112 ¶ 2. *Id.* at 11-12. Nonetheless, for purposes of this proceeding, Petitioner asserts that “a comparator for comparing all incoming orders relative to outgoing

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orders” should be construed as hardware, software, or a combination of both that compares incoming and outgoing orders. *Id.* at 12 (citing Ex. 1005 ¶ 72).

In response, Patent Owner contends that failure to use the word “means” creates a presumption that the claim term “comparator” was not intended to invoke 35 U.S.C. § 112 ¶ 6, but rather should be given its ordinary and customary meaning. Prelim. Resp. 16. Patent Owner argues that the claim term “comparator” is a hardware device configured to “compar[e] all incoming orders relative to outgoing orders.” *Id.* at 16-17.

The use of the term “means” is central to the analysis of whether a claim limitation should be interpreted in accordance with 35 U.S.C. § 112 ¶ 6. *Personalized Media Commc’ns, LLC v. Int’l Trade Comm’n*, 161 F.3d 696, 703-04 (Fed. Cir. 1998); *Flo Healthcare Solutions, LLC v. Kappos*, 697 F.3d 1367, 1373 (Fed. Cir. 2012). Use of the word “means” creates a rebuttable presumption that the patentees intended to invoke § 112 ¶ 6, whereas failure to use the word “means” creates a rebuttable presumption that the patentees did not intend to invoke § 112 ¶ 6. *Id.*

In this case, the absence of the word “means” creates the strong—but rebuttable—presumption that the patentees did not intend the claim term “comparator” to be governed by § 112 ¶ 6. *See Flo Healthcare*, 697 F.3d at 1373. To determine whether the presumption is overcome, we must decide whether the claim term “comparator,” as recited in dependent claims 23 and 42, is one that connotes structure, or is instead a nonce word, or verbal construct, devoid of structure that is used as a substitute for “means for.”

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See Lighting World, Inc. v. Birchwood Lighting, Inc., 382, F.3d 1354, 1360 (Fed. Cir. 2004).

Upon reviewing the specification of the '419 patent, we note that the word “comparator” only appears outside of the claims in the “Summary of the Invention” section, which repeats the claim language of dependent claims 23 and 42 verbatim. Ex. 1001, 4:8-9 (“a comparator for comparing all incoming orders relative to outgoing orders”). As such, the specification of the '419 patent does not provide an explicit definition for the claim term “comparator.” Therefore, we refer to its ordinary and customary meaning as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *In re Translogic Tech. Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). The MICROSOFT PRESS COMPUTER DICTIONARY (3rd ed. 1997) defines “comparator” as “[a] *device* for comparing two items to determine whether they are equal.” Emphasis added. Based on that dictionary definition, we conclude that one with ordinary skill in the art would have recognized that a “comparator” is the name of a sufficiently definite structure for comparing two items. For purposes of this decision, we construe the claim term “comparator” as a device that “compare[s] all incoming orders relative to outgoing orders.”

4. “*External price feed*” (claims 1, 41, and 43)

Petitioner contends that the claim phrase “external price feed” should be construed as “price data received from outside of the electronic trading system.” Pet. 12-13. Petitioner argues that its proposed claim construction is consistent with the claim construction for the claim term “external” in the

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related litigation, the relevant disclosures in the specification of the '419 patent, as well as Patent Owner's arguments made during *ex parte* reexamination. *Id.* at 13-14 (citing Ex. 1006, p. 00003; Ex. 1001, 1:10-11, 41-55; 2:64-3:2; 5:56-60; Ex. 1002, pp. 00849-50; Ex. 1005 ¶¶ 74-76). In response, Patent Owner contends that the claim phrase "external price feed" should be construed as "order-related information received from outside the conditional order transaction network's trade engine order inventory." Prelim. Resp. 18-19 (citing Ex. 1006, p. 00003).

Upon reviewing the specification of the '419 patent, we note that two of the disclosures relied upon by Petitioner are helpful in determining the broadest reasonable interpretation of the claim term "external." When providing a summary of the invention of the '419 patent, the specification states that:

The number of items and the amount of cash that exchanges hands is determined programmatically in accordance with predefined constraints specified when orders are made and as a product of the *data originating outside of the system, i.e., external data sources*, and provided to it by external agents.

Ex. 1001, 2:64-3:2 (emphasis added). Further, when discussing the CORE Central Systems 10 illustrated in Figure 1 of the '419 patent, the specification states that it "*receive[s] data, from some external source*, that needs to be distributed internally. The system formats and transmits a message, including the external data, through a distributed topic DT3 to any clients that have expressed interest in this data T3." Ex. 1001, 5:56-60 (emphasis added).

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Applying the broadest reasonable interpretation standard, we construe the claim phrase “external price feed” as “price data received from outside of the conditional order transaction network.” We do not agree with Petitioner’s proposed claim construction because it is unclear what constitutes “the electronic trading system.” We also do not agree with Patent Owner’s proposed claim construction because “order-related information” includes more than just price data. Instead, it may encompass any data related to the order of a security, e.g., contract month, account number, quantity, etc. Moreover, Patent Owner does not direct us to a portion of the specification of the ’419 patent that supports limiting the claim phrase “external price feed” to information that is “received from outside the conditional order transaction’s trade engine order inventory.”

5. *“Controller computer means . . . receiving as inputs”
 (claims 41 and 43)*

Petitioner contends that the claim phrase “controller computer means” is a mean-plus-function limitation that performs the recited function of “receiving,” as input, each algorithm and at least one external price feed. Pet. 15. Petitioner identifies the corresponding structure for performing the recited function of “receiving” as nothing more than a general purpose computer. *Id.* (citing Ex. 1001, 4:5-6; 5:38-39, 56-57; Ex. 1005 ¶ 79). Patent Owner does not dispute Petitioner’s proposed claim construction for the claim phrase “controller computer means.”

As discussed previously, the use of the term “means” is central to the analysis of whether a claim limitation should be interpreted in accordance

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with § 112 ¶ 6. *Personalized Media*, 161 F.3d at 703-04; *Flo Healthcare*, 697 F.3d at 1373. In this case, the presence of the word “means” creates the strong—but rebuttable—presumption that the patentees intended that the claim phrase “controller computer means . . . receiving as inputs” should be governed by § 112 ¶ 6. *See Flo Healthcare*, 697 F.3d at 1373. To determine whether the presumption is overcome, we must decide whether the claim term “controller computer,” as recited in independent claims 41 and 43, is one that connotes structure. *See Lighting World*, 382 F.3d at 1360.

The specification of the ’419 patent discloses “a computer for receiving the outgoing orders and incoming order information from traders’ terminals, and for controlling the display device.” Ex. 1001, 4:5-6. Based on that disclosure, one with ordinary skill in the art would have recognized that a computer is the name of a sufficiently definite structure. Therefore, we will not construe “controller computer means . . . receiving as inputs” in accordance with § 112 ¶ 6, but rather construe the disputed claim phrase according to its ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *Translogic*, 504 F.3d at 1257. For purposes of this decision, we construe “controller computer means . . . receiving as inputs” as a computer that receives, as input, data.

6. *Remaining Claim Terms or Phrases*

All remaining claim terms or phrases recited in claims 1-23 and 41-49 are given their ordinary and customary meaning, as would be understood by

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one with ordinary skill in the art, and need not be construed explicitly at this time.

B. 35 U.S.C. § 112 ¶ 2 Ground of Unpatentability

Petitioner contends that claims 1-23 and 41-49 are indefinite under 35 U.S.C. § 112 ¶ 2. Pet. 15-19. Upon consideration of Petitioner's analysis and supporting evidence, and taking into account Patent Owner's arguments submitted in its preliminary response, we determine that it is more likely than not that only claims 1-23 are indefinite under § 112 ¶ 2.

Petitioner presents a number of arguments explaining why specific claim limitations recited in claims 1-23 and 41-49 are indefinite under § 112 ¶ 2. *Id.* We will discuss each claim limitation in turn.

1. "Means for matching" (claims 1, 41, and 43)

Petitioner contends that the specification of the '419 patent fails to disclose an algorithm for performing the recited function of "matching" and, therefore, claims 1-23 and 41-49 are indefinite under § 112 ¶ 2. Pet. 15-18 (citing Ex. 1001, 7:22-24; Ex. 1005 ¶ 92). In response, Patent Owner contends that the specification of the '419 patent discloses that Figure 3 illustrates the processing of a match order using the system of Figure 1, as well as a supporting process flow diagram. Prelim. Resp. 24-27 (citing Ex. 1001, 6:41-42; 6:62-7:47). Therefore, Patent Owner argues that Petitioner has not met its burden of showing that claims reciting the claim phrase "means for matching" are, more likely than not, indefinite under § 112 ¶ 2. *Id.*

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When construing the claim phrase “means for matching” above, we identified the corresponding structure for performing the recited function of “matching” to be a computer programmed to perform the ten processing steps illustrated in Figure 3 of the ’419 patent. In other words, we concluded that the processing steps illustrated in Figure 3 of the ’419 patent amount to a specific algorithm that transforms an otherwise general purpose computer into a special purpose computer programmed to perform the recited function of “matching.” *See Finisar*, 523 F.3d at 1340. Consequently, because the specification of the ’419 patent discloses sufficient structure for performing the recited function of “matching,” we are not persuaded that Petitioner has demonstrated that claims reciting the claim phrase “means for matching” are, more likely than not, indefinite under § 112 ¶ 2.

2. “*Means for matching or comparing*”

Given that “means for matching or comparing” recited in claims 1-23 includes alternative language, we will address “means for matching” and “means for comparing” separately. With respect to “means for matching,” we identified the corresponding structure for performing the recited function of “matching”—namely a computer programmed by the algorithm represented by the ten processing steps illustrated in Figure 3 of the ’419 patent. Consequently, we are not persuaded that Petitioner has demonstrated that claims reciting the claim phrase “means for matching” are, more likely than not, indefinite under § 112 ¶ 2.

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With respect to the “means for comparing,” Petitioner contends that the specification of the ’419 patent fails to disclose an algorithm for performing the recited function of “comparing” and, therefore, claims 1-23 are indefinite under § 112 ¶ 2. Pet. 15-18 (citing Ex. 1005 ¶ 92). In response, Patent Owner contends that the specification of the ’419 patent provides several disclosures, including diagrams, that explain the recited function of “comparing.” Prelim. Resp. 27-28 (citing Ex. 1001, 13:44-14:45; 15:11-19; fig. 4). Therefore, Patent Owner argues that Petitioner has not met its burden of showing that claims reciting the claim phrase “means for comparing” are, more likely than not, indefinite under § 112 ¶ 2. *Id.*

When construing the claim phrase “means for comparing” above, we reviewed the disclosures in the specification of the ’419 patent relied upon by Patent Owner to explain the recited function of “comparing,” and ultimately identified the corresponding structure as nothing more than a general purpose computer. In other words, we concluded that the disclosure in the specification of the ’419 patent regarding a single step of comparing orders based on the “best” prices given does not amount to a specific algorithm that transforms an otherwise general purpose computer into a special purpose computer programmed to perform the recited function of “comparing.” See *Finisar*, 523 F.3d at 1340; *Blackboard*, 574 F.3d at 1384; see also *Encyclopedia Britannica*, 2009 WL 4458527 at * 5. Consequently, because the specification of the ’419 patent does not disclose sufficient structure for performing the recited function of “comparing,” we are persuaded that Petitioner has demonstrated that claims reciting the claim

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phrase “means for comparing” are, more likely than not, indefinite under § 112 ¶ 2.

3. *“A comparator for comparing all incoming orders relative to outgoing orders”*

Petitioner contends that the claim term “comparator” invokes 35 U.S.C. § 112 ¶ 6. Pet. 18. Petitioner argues that, although the specification of the ’419 patent discloses that a general purpose computer performs the recited function of “comparing,” it fails to disclose a corresponding algorithm for implementing that function. *Id.* Therefore, Petitioner asserts that claims 23 and 42 are indefinite under § 112 ¶ 2. *Id.* In response, Patent Owner contends that the claim term “comparator” does not invoke § 112 ¶ 6, but instead is a specific hardware device within a computer. Prelim. Resp. 28-29. As such, Patent Owner asserts that Petitioner has demonstrated that claims reciting the claim term “comparator” are, more likely than not, indefinite under § 112 ¶ 2. *Id.* at 30.

When construing the claim term “comparator” above, we determined that the rebuttable presumption the patentees did not intend to invoke § 112 ¶ 6 was not overcome. Upon referencing a dictionary definition, we concluded that one with ordinary skill in the art would have recognized that a “comparator” is the name of a sufficiently definite structure for comparing two items—in this case, comparing incoming orders to outgoing orders. Consequently, because one with ordinary skill in the art would have been reasonably apprised of the scope of the claim term “comparator,” we are not persuaded that Petitioner has demonstrated that claims reciting the claim

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phrase “a comparator for comparing all incoming orders relative to outgoing order” are, more likely than not, indefinite under § 112 ¶ 2.

C. 35 U.S.C. § 103(a) Grounds of Unpatentability Based in Whole or in Part on the Combination of CFTC and Lupien

Petitioner contends that: (1) claims 1, 2, 4, 6-8, 11, 15, 16, 22, 23, and 41-49 are unpatentable under 35 U.S.C. § 103(a) over the combination of CFTC and Lupien; (2) claims 3 and 5 are unpatentable under 35 U.S.C. § 103(a) over the combination of CFTC, Lupien, and Wilson; (3) claims 9, 10, 12, 14, and 18 are unpatentable under 35 U.S.C. § 103(a) over the combination of CFTC, Lupien, and Grody; (4) claims 13 and 17 are unpatentable under 35 U.S.C. § 103(a) over the combination of CFTC, Lupien, and Dictionary; and (5) claims 19-21 are unpatentable under 35 U.S.C. § 103(a) over the combination of CFTC, Lupien, and Globex User Guide. Pet. 54-77. In particular, Petitioner uses claim charts to explain how the cited prior art references allegedly teach the claimed subject matter, and relies upon the Declaration of Dr. Craig Pirrong (Ex. 1005) to support its positions. *Id.* Taking into account the arguments submitted by Patent Owner in the preliminary response, we are persuaded by the analysis set forth in Petitioner’s claim charts and supporting evidence.

We begin our analysis with a general discussion of CFTC and Lupien, and the position taken by Petitioner with respect to the “external price feed” as required by independent claims 1, 41, and 43, and then we turn to the arguments presented by Patent Owner.

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1. CFTC

CFTC generally relates to New York Mercantile Exchange (“NYMEX”) proposed rules and the rule amendments necessary to implement NYMEX American Computerized Commodity Exchange System and Services (“NYMEX ACCESS”). Ex. 1009, p. 3. NYMEX ACCESS is an electronic order matching system that may be used by NYMEX members and customers trading through NYMEX members to trade futures and options contracts after NYMEX’s regular trading hours. *Id.* In addition to the trade execution function, NYMEX ACCESS provides trade reporting and quotation information for NYMEX ACCESS contracts traded via the system. Ex. 1009, pp. 3-4.

CFTC discloses a NYMEX ACCESS trade matching host that accepts limit orders, i.e., orders to buy or sell a particular number of futures or option contracts in a given commodity and month at a specified price, and spread orders entered at a differential. Ex. 1009, p. 19. NYMEX ACCESS terminal operators enter orders into the NYMEX ACCESS system using a Trader Work Station. Ex. 1009, pp. 4, 9. The NYMEX ACCESS trade matching host is coupled to these Trader Work Stations over a network and, therefore, is capable of receiving the orders entered at each station. Ex. 1009, p. 4. Orders cannot be entered into the NYMEX ACCESS system for a customer unless the customer provides the following information: (1) Commodity; (2) Contract Month; (3) Buy or Sell; (4) Account Number; (5) Quantity; (6) Limit Price; (7) Clearing Member; (8) Strike Price and Put

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or Call; and (9) any precondition for entry into the matching system.

Ex. 1009, pp. 20-21.

CFTC discloses at least one example where the price of one security is dependent on the price of another security being traded. For instance, the NYMEX ACCESS system may generate implied spread bids and offers by calculating spread differentials based on the current, best prices for each component in the order. Ex. 1009, p. 28. CFTC also may generate conditional bids and offers only if they better the best bids or offers currently in the market. Ex. 1009, pp. 28-29. These conditional bids and offers would adjust as the underlying markets move. Ex. 1009, p. 29. If a conditional bid or offer was taken, the NYMEX ACCESS system immediately completes the transaction by buying or selling the number of contracts of securities in accordance with the conditions and constraints entered as part of the order. *Id.*

2. *Lupien*

Lupien generally relates to an automated system for trading securities in financial markets that increases liquidity and depth in such markets by trading portions of normally dormant portfolios, including those with numerous and diverse securities. Ex. 1010, 1:6-11. When discussing the on-line storage devices associated with the automated securities trading system, Lupien discloses that external data is available to clients from securities information vendors. Ex. 1010, 6:20-22. The external data from securities information vendors may include quote and trade feeds covering current external quotes, trades, and other market data. Ex. 1010, 9:53-54.

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As orders are executed, market quotes change, or trades occur in the market, the automated securities trading system updates the market data and portfolio holdings, including cash, and recalculates purchase and sale orders for all relevant securities. Ex. 1010, 4:32-36.

3. Petitioner's Contentions

Petitioner takes the position that CFTC teaches all the claim limitations recited in each independent claim, except “at least one external price feed depicting prices of various securities and contracts from external multiple exchanges which may be used as an independent variable of the algorithm or an input to a constraint variable,” as recited in independent claim 1, and similarly recited in independent claims 41 and 43. Pet. 57-66. Petitioner relies upon Lupien’s disclosure of making external market data from securities information vendors available to clients to teach the aforementioned claim limitation. *Id.* at 59, 62, 65 (citing Ex. 1010, 4:32-36; 6:20-22). Petitioner also provides a rationale to combine the teachings of CFTC and Lupien. *Id.* at 56 (citing 1005 ¶ 123-24).

4. Patent Owner's Contentions

Patent Owner provides numerous arguments explaining how the cited prior art references fail to teach the claimed subject matter recited in independent claims 1, 41, and 43. We will address each argument in turn.

Patent Owner contends that CFTC’s disclosure of linking exchanges, i.e., linking the Chicago exchange with the Singapore exchange, does not teach the “external price feed,” as claimed. Prelim. Resp. 50-51. Instead, Patent Owner argues that the linkage disclosed in CFTC is merely a way to

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transmit an order to a remote exchange that happens to be open during extended hours. *Id.* at 51. Patent Owner's argument is misplaced. When assessing obviousness, the test is what the combined teachings of the references would have suggested to one with ordinary skill in the art. *In re Young*, 927 F.2d 588, 591 (Fed. Cir. 1991). Here, Petitioner does not rely upon CFTC to teach the "external price feed," as claimed. Instead, Petitioner takes the position that Lupien's disclosure of making external market data from securities information vendors available to clients teaches the disputed claim limitation. Pet. 59, 62, 65 (citing Ex. 1010, 4:32-36; 6:20-22).

Patent Owner also contends that Lupien does not cure the alleged deficiencies in CFTC. Pet. 57-60. In particular, Patent Owner argues that Lupien does not teach trading based upon a contingent market, much less an algorithmic trade that uses an "external price feed" as one variable. *Id.* Again, Patent Owner's argument is misplaced. Patent Owner fails to account for what the combined teachings of CFTC and Lupien would have suggested to one with ordinary skill in the art. *See Young*, 927 F.2d at 591. Here, the argument presented by Patent Owner is predicated on the notion that Lupien does not teach contingent trades. However, Petitioner takes the position that CFTC generates conditional bids and offers. Pet. 57-58 (citing Ex. 1009, pp. 20-21, 28). Petitioner relies upon the combined teachings of CFTC and Lupien to teach that one with ordinary skill in the art would have understood that CFTC's conditional trades may use at least one variable

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from Lupien's external market data—namely price—to calculate and match trades. *See* Pet. 56 (citing Ex. 1005 ¶¶ 123-24).

Patent Owner further contends that Petitioner does not provide an articulated reason with a rational underpinning to combine the teachings of CFTC and Lupien. Pet. 64-66. In particular, Patent Owner argues that, although Petitioner explains that Lupien discloses external market data and an order matching system that uses such data, Petitioner does not suggest or explain how or why one with ordinary skill in the art would seek to combine the teachings of CFTC and Lupien to develop contingent internal and external algorithmic trade mechanisms. *Id.* at 65-66. We are not persuaded by Patent Owner's argument.

To support combining the teachings of CFTC and Lupien, Petitioner explains that:

Lupien, combined with CFTC, discloses executing a trade of multiple securities in the same and diverse markets with a single order where the price of one security is responsive to dynamic changes in price of another security or other securities in that order. Ex. 1005, Pirrong Decl. ¶ 123.

Pet. 56. Petitioner also explains that:

It would have been obvious to one with ordinary skill in the art to modify the NYMEX ACCESS system described in CFTC, based on Lupien, to use external market data in calculating and matching purchase and sale orders. Ex. 1005, Pirrong Decl. ¶ 124.

Id. In our view, these statements suffice as an articulated reason with a rational underpinning to justify combining the teachings of CFTC and

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Lupien. *See KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 418 (2007). Moreover, Patent Owner has not provided sufficient or credible evidence that adding Lupien's external prices to CFTC's NYMEX ACCESS system would be challenging or otherwise beyond the level of an ordinary skilled artisan. *See Leapfrog Enters., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1162 (Fed. Cir. 2007).

Finally, Patent Owner contends that modifying CFTC with Lupien's external prices would render CFTC unsatisfactory for its intended purpose, or otherwise change CFTC's principle of operation. Pet. 66-68. We are not persuaded by Patent Owner's argument. First, Patent Owner does not identify clearly the principle of operation that would be changed in CFTC. Second, this argument is predicated on the notion that CFTC's NYMEX ACCESS system only generates prices internally and the addition of external prices would make trades executed by the system less accurate. *See id.* Apart from mere attorney argument, the record before us does not include sufficient or credible evidence that CFTC's NYMEX ACCESS system would become inoperable if it included external prices. *Cf In re Geisler*, 116 F.3d 1465, 1470 (Fed. Cir. 1997) (Attorney arguments and conclusory statements that are unsupported by factual evidence are entitled to little probative value).

Based on the record before us, Petitioner has demonstrated it is more likely than not that independent claims 1, 41, and 43 are unpatentable under 35 U.S.C. § 103(a) over the combination of CFTC and Lupien. The explanations and evidence provided by Petitioner as to how the combination

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of CFTC and Lupien, as well as other cited prior art references, teach the claimed subject matter recited in dependent claims 2-23, 42, and 44-49 have merit and are otherwise un rebutted. Therefore, Petitioner also has demonstrated it is more likely than not that: (1) claims 2, 4, 6-8, 11, 15, 16, 22, 23, 42, and 44-49 are unpatentable under 35 U.S.C. § 103(a) over the combination of CFTC and Lupien; (2) claims 3 and 5 are unpatentable under 35 U.S.C. § 103(a) over the combination of CFTC, Lupien, and Wilson; (3) claims 9, 10, 12, 14, and 18 are unpatentable under 35 U.S.C. § 103(a) over the combination of CFTC, Lupien, and Grody; (4) claims 13 and 17 are unpatentable under 35 U.S.C. § 103(a) over the combination of CFTC, Lupien, and Dictionary; and (5) claims 19-21 are unpatentable under 35 U.S.C. § 103(a) over the combination of CFTC, Lupien, and Globex User Guide.

D. 35 U.S.C. § 101 Ground of Unpatentability

Petitioner contends that claims 1-23 and 41-49 are directed to non-statutory subject matter under 35 U.S.C. § 101. Pet. 19-24. Upon reviewing Petitioner's analysis and supporting evidence, and taking into account Patent Owner's arguments submitted in its preliminary response, we determine that Petitioner has not established that claims 1-23 and 41-49 are, more likely than not, directed to non-statutory subject matter under § 101.

The United States Supreme Court has made it clear that the test for patent eligibility under § 101 is not amenable to bright-line categorical rules. *Bilski v. Kappos*, 130 S. Ct. 3218, 3229-30 (2010). Further, the United States Court of Appeals for the Federal Circuit has recognized that it has

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been especially difficult to apply § 101 properly in the context of computer-implemented inventions. *CLS Bank Int’l v. Alice Corp. Pty. Ltd.*, 717 F.3d 1269, 1277 (Fed. Cir. 2013).

Our analysis begins with the statute. Section 101 of Title 35, United States Code, provides that:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

“‘In choosing such expansive terms . . . modified by the comprehensive ‘any,’ Congress plainly contemplated that the patent laws would be given wide scope.’” *Bilski*, 130 S. Ct. at 3225 (quoting *Diamond v. Chakrabarty*, 447 U.S. 303, 308 (1980)). There are, however, three limited, judicially created exceptions to the broad categories of patent-eligible subject matter in § 101: laws of nature, natural phenomena, and abstract ideas. *Id.*

Although an abstract idea by itself is not patentable, a practical application of an abstract idea may be deserving of patent protection. *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1293-94 (2012); *Bilski*, 130 S. Ct. at 3230; *Diamond v. Diehr*, 450 U.S. 175, 187 (1981). To be patent-eligible, a claim cannot simply state the abstract idea and add the words “apply it.” *See Mayo*, 132 S. Ct. at 1294. The claim must incorporate enough meaningful limitations to ensure that it claims more than just an abstract idea and is not merely a “drafting effort designed to monopolize the [abstract idea] itself.” *See id.* at 1297. Limiting the claim to a particular technological environment or field of use, or adding insignificant

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pre- or post-solution activity, do not constitute meaningful limitations. *See Bilski*, 130 S. Ct. at 3230; *Diehr*, 450 U.S. at 191-92; *Parker v. Flook*, 437 U.S. 584, 595 n.18 (1978).

The challenged claims of the '419 patent each recite “a conditional order transaction network,” or system, that is, by definition, directed to statutory subject matter under §101. Here, the issue before us is whether the claimed systems amount to no more than an abstract idea. Petitioner has not persuaded us that the claimed systems, more likely than not, amount to no more than an abstract idea.

We address independent claims 1, 41, and 43 of the '419 patent, as Petitioner's arguments are directed primarily to these claims. *See* Pet. 19-22. Petitioner contends that the invention of the '419 patent centers on the abstract idea of “determining a price using external data sources.” *Id.* at 20 (citing Ex. 1005 ¶ 96).

We do not view independent claims 1, 41, and 43 as reciting merely determining a price using external data sources. These independent claims recite a specific combination of computer components that interact in such a way to match or compare buy and sell orders for a plurality of securities based upon conditions set forth within each order. With respect to independent claim 1, buy and sell orders for securities are entered in the form of an algorithm, with conditions and constraints associated therewith, at any one of “a variable number of trading terminals.” “[A]t least one controller computer” receives the buy and sell orders entered at the “trading terminals” via a “communications network,” as well as “at least one external

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price feed depicting prices of various securities and contracts from external multiple exchanges.” The “controller computer” includes a “means for matching” and a “means for matching or comparing.” As discussed previously, the “means for matching” constitutes a special purpose computer that performs the recited function of “matching” the conditional buy and sell orders using the “external multiple data sources.” Independent claims 41 and 43 recite similar claim limitations.

The “trading terminals,” “controller computer,” “communications network,” “external price feed,” “means for matching,” and “means for matching or comparing” components, as well as the specific functions performed using those components, represent meaningful limitations on the scope of independent claim 1 that take it beyond the abstract concept of merely determining a price using external data sources. The same can be said with respect to the scope of independent claims 41 and 43. In other words, independent claims 1, 41, and 43 do not recite merely determining a price using external data sources. Instead, conditional buy and sell orders for securities are entered at a first location (“trading terminals”), transmitted via a particular medium (“communications network”) to a particular device (“controller computer”), and, using a special purpose computer (“means for matching”), the orders are matched using the price of securities available in other markets (“multiple external exchanges”). The specific functions performed using these components are not insignificant pre- or post-solution activity—they are the solution itself.

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Petitioner further contends that the specific computer components recited in independent claims 1, 41, and 43 of the '419 patent do not add anything to the abstract idea beyond routine, well-known conventional hardware. Pet. 21-22 (citing Ex. 1005 ¶¶ 100, 102-03). The relevant inquiry here is “whether a claim, as a whole, includes *meaningful* limitations restricting it to an application, rather than merely an abstract idea.” *Ultramercial, Inc. v. Hulu, LLC*, 722 F.3d 1335, 1344 (Fed. Cir. 2013). Petitioner’s analysis, however, does not account sufficiently for each claim as a whole, i.e., the particular combination of components and how each claim requires that they be used. Although the claimed “trading terminals,” “communications network,” and “controller computer” were known at the time the invention of the '419 patent, it is those components in combination, including the specific functions performed using the components, that must be analyzed. Assessing independent claims 1, 41, and 43 in that light, we are not convinced that it is more likely than not that these independent claims represent only the abstract idea of determining a price using external data sources.

We agree with Patent Owner that *Ultramercial* is helpful in determining whether independent claims 1, 41, and 43 include meaningful limitations. Prelim. Resp. 33-34. The claimed invention in that case was a method of monetizing and distributing copyrighted products over the Internet. *Ultramercial*, 722 F. 3d at 1337-38. The steps recited in the claim there involved specific electronic interactions between specific computer systems over a communications network. *Id.* at 1350. According to the

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Federal Circuit, the method in *Ultramercial* required an “extensive computer interface” and performance of the method “through computers, on the internet, and in a cyber-market environment.” *Id.* at 1350-52. The Court held that the claim was not directed to the abstract idea of monetizing advertising, but rather had meaningful limitations restricting it to a practical application of that idea. *Id.* at 1352-54. As the Court observed in *Ultramercial*:

When assessing computer implemented claims, while the mere reference to a general purpose computer will not save a method claim from being deemed too abstract to be patent eligible, the fact that a claim is limited by a tie to a computer is an important indication of patent eligibility. This tie to a machine moves it farther away from a claim to the abstract idea itself. Moreover, that same tie makes it less likely that the claims will pre-empt all practical applications of the idea.

This inquiry focuses on whether the claims tie the otherwise abstract idea to a *specific way* of doing something with a computer, or a *specific computer* for doing something; if so, they likely will be patent eligible. On the other hand, claims directed to *nothing more than the idea* of doing that thing on a computer are likely to face larger problems. While no particular type of limitation is necessary, meaningful limitations may include the computer being part of the solution, being integral to the performance of the method, or containing an improvement in computer technology.

Id. at 1348 (citations omitted, emphasis added).

We note that, like the claim at issue in *Ultramercial*, independent claims 1, 41, and 43 involve specific interactions between specific computer components over a communication network. *See id.* at 1350. Moreover, the calculations required by independent claims 1, 41, and 43 are not capable of

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being performed by just any general purpose computer. As discussed previously, the “means for matching” recited in each independent claim encompass processing steps illustrated in Figure 3 of the ’419 patent that amount to a specific algorithm that transforms an otherwise general purpose computer into a special purpose computer programmed to perform the recited function of “matching.” *See Finisar*, 523 F.3d at 1340. Finally, there is no indication in the disclosure of the ’419 patent, nor the extensive prosecution history (*see, e.g.*, Ex. 1002), that the functions performed by the computer components recited in each claimed system can be performed by a human using a pen and paper. The specific computer components recited in each independent claim are integral to the performance of the claimed systems.

Based on the record before us, Petitioner has not demonstrated that independent claims 1, 41, and 43 are, more likely than not, directed to non-statutory subject matter under § 101. With respect to dependent claims 2-23, 42, and 44-49, Petitioner contends that these claims do not recite additional limitations beyond routine, conventional activity, or otherwise recite insignificant post-solution activity. Pet. 22-24. However, dependent claims 2-23, 42, and 44-49 incorporate by reference all the claim limitations recited in their underlying base claim. Therefore, for essentially the same reasons explained above with respect to independent claims 1, 41, and 43, Petitioner also has not demonstrated that dependent claims 2-23, 42, and 44-49 are, more likely than not, directed to non-statutory subject matter under § 101.

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E. Remaining 35 U.S.C. § 103(a) Grounds of Unpatentability

Petitioner contends that: (1) claims 1, 2, 4, 6-8, 11, 15, 16, 22, 23, and 41-49 are unpatentable under 35 U.S.C. § 103(a) over the combination of CFTC and Miller; (2) claims 3 and 5 are unpatentable under 35 U.S.C. § 103(a) over the combination of CFTC, Miller, and Wilson; (3) claims 9, 10, 12, 14, and 18 are unpatentable under 35 U.S.C. § 103(a) over the combination of CFTC, Miller, and Grody; (4) claims 13 and 17 are unpatentable under 35 U.S.C. § 103(a) over the combination of CFTC, Miller, and Dictionary; (5) claims 19-21 are unpatentable under 35 U.S.C. § 103(a) over the combination of CFTC, Miller, and Globex User Guide; and (6) claims 1, 2, 4, 6-12, 14-16, 18, 22, 23, 41, 42, and 44-47 are unpatentable under 35 U.S.C. § 103(a) over the combination of CFTC and Grody. Pet. 24-54, 70-80. Those grounds of unpatentability are redundant, in light of the grounds of unpatentability on the basis of which we initiate a covered business method patent review. Accordingly, we do not authorize a covered business method patent review on the remaining grounds of unpatentability asserted by Petitioner against claims 1-23 and 41-49 of the '419 patent. *See* 37 C.F.R. § 42.108(a).

III. CONCLUSION

For the foregoing reasons, we determine that the information presented in the petition establishes that claims 1-23 and 41-49 of the '419 patent are, more likely than not, unpatentable. However, we have not made

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a final determination with respect to the patentability of the challenged claims.

IV. ORDER

Accordingly, it is:

ORDERED that pursuant to 35 U.S.C. § 324 and § 18(a) of the AIA, a covered business method patent review is hereby instituted as to claims 1-23 and 41-49 of the '419 patent based on the following grounds of unpatentability:

- A. Claims 1-23 under 35 U.S.C. § 112 ¶ 2 as being indefinite;
- B. Claims 1, 2, 4, 6-8, 11, 15, 16, 22, 23, and 41-49 under 35 U.S.C. § 103(b) as being unpatentable over the combination of CFTC and Lupien;
- C. Claims 3 and 5 under 35 U.S.C. § 103(a) as being unpatentable over the combination of CFTC, Lupien, and Wilson;
- D. Claims 9, 10, 12, 14, and 18 under 35 U.S.C. § 103(a) as being unpatentable over the combination of CFTC, Lupien, and Grody;
- E. Claims 13 and 17 under 35 U.S.C. § 103(a) as being unpatentable over the combination of CFTC, Lupien, and Dictionary; and
- F. Claims 19-21 under 35 U.S.C. § 103(a) as being unpatentable over the combination of CFTC, Lupien, and Globex User Guide;

FURTHER ORDERED that no other grounds of unpatentability are authorized for this covered business method patent review as to claims 1-23 and 41-49 of the '419 patent;

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FURTHER ORDERED that pursuant to 35 U.S.C. § 324(d) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial; the trial is commencing on the entry date of this decision; and

FURTHER ORDERED that an initial conference call with the Board is scheduled for 2PM ET on January 8, 2014; the parties are directed to the Office Trial Practice Guide, 77 Fed. Reg. at 48765-66, for guidance in preparing for the initial conference call, and should be prepared to discuss any proposed changes to the Scheduling Order entered herewith and any motions the parties anticipate filing during the trial.

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